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CHIMBORAZO HOSPITAL, CONFEDERATE STATES ARMY, AMERICA'S LARGEST MILITARY HOSPITAL.

MAJOR EDGAR ERSKINE HUME, Medical Corps, U. S. Army,
Washington, D. C.

The honor of speaking on this historic occasion is one which any Southern man would appreciate. It is also to me a privilege because, a military surgeon myself, I am at present the Librarian of the Army Medical Library in Washington, the largest medical library in the world, an institution which from 1904 to 1913 was directed by Brigadier-General Walter Drew McCaw, the distinguished son of the founder of the Chimborazo Hospital. As it fell to my lot during the World War to have charge of the hospitals of the United States Army in the Italian War Zone, I know something of what it means to conduct an institution of this kind, though under the conditions of the World War with no shortage of supplies, equipment or personnel, I can sense only at a most respectful distance, the difficulties under which the Chimborazo Hospital functioned so efficiently.

The site of the Chimborazo Hospital, here on an elevated plateau above *Jeemses River,* as I am sure most of its inmates called it, was well chosen. It was separated from the city of Richmond by Bloody Run Creek, a significant name given it by the Indians in Colonial days. It came into being in 1862 when General Joseph E. Johnston reported to the War Department that with the enemy's move in force on Bull Run, some nine thousand men would have to be sent back to Richmond. The distinguished Surgeon General of the Confederate States Army, Dr. Samuel Preston Moore, a former officer of the regular United States Army, knew to whom to turn in the emergency. He went at once to see Dr. James Brown McCaw, one of the most noted of Richmond's physicians. Dr. McCaw was already in his country's service, having early in the war joined a company of cavalry. But a greater duty lay before him, and unhesitatingly he assumed the great task.

He selected the site and with almost unbelievable speed, the hospital was made ready to receive patients. At the time of General Johnston's warning to the Surgeon General, that officer had only 2,500 beds at his disposal. To be ready to receive 9,000 and probably many more patients within a brief period required great skill in administration and organization. Surgeon General Moore and Surgeon McCaw had these qualities. Work began immediately, and 150 wooden buildings were completed. These were, of course, not all set up at once, but, as is usual in war-time construction, as fast as needed and as fast as materials and workmen could be supplied. It must not be supposed that the entire construction of the Chimborazo Hospital was completed in a few days' time. The buildings had in many cases merely to be remodeled, for they had been constructed as winter quarters for the Army of Northern Virginia, but the enemy's drive on Richmond forced the Confederate Army to fight the winter out at Manassas.

The buildings measured approximately 100 feet in length by 30 feet in width. They were of one story, seven feet, in height. Each building had ten windows. From forty to sixty patients were accommodated in each building.

Not only were the buildings themselves airy, but were not placed too near together and ample space for drives and walks was allowed. Realizing the necessity for proper ventilation, the Commandant ordered an allowance of approximately 800 to 1,000 cubic feet of air space per patient, and that attendants and others be not permitted to sleep in the

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wards, for they would in that way have reduced the amount of fresh air available to each patient. The prevailing breeze from the Southwest from the near-by woodlands was always a source of comfort. This regulation is exactly what we required in the World War during the epidemic of influenza.

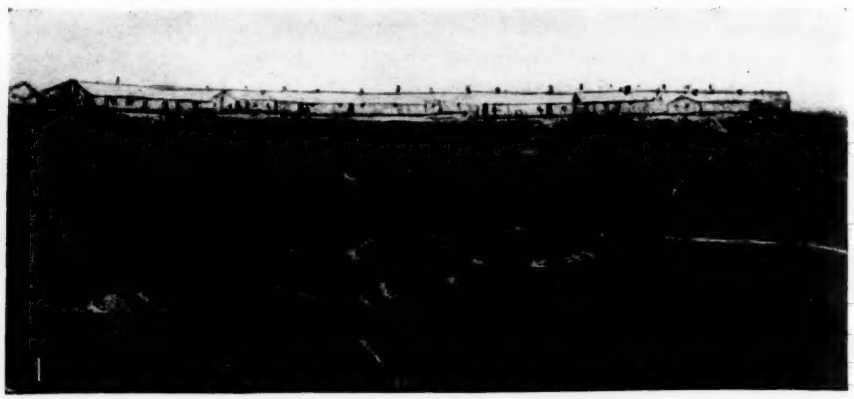
In addition to the 150 hospital buildings, the post included 100 Sibley tents in which eight to ten convalescent men could be quartered. These tents were spread upon the slope of the hill.

"The hospitals," wrote Surgeon John R. Gildersleeve, C. S. A., "presented the appearance of a large town, imposing and attractive, with its alignment of buildings kept whitened with lime, streets and alleys always clean, and with its situation on such an elevated point, it commanded a grand, magnificent, and pleasing view of the surrounding country for many miles." In the first week two thousand patients were received, and in two weeks' time there were in all four thousand.

The site was well chosen and had an ample supply of good water. There was natural drainage on the east, south and west. There were five large ice houses, Russian bath-houses, and adequate provision for the disposal of wastes. Dr. McCaw profited by the hard lessons learned in the first year of the war when there was general confusion and the belief that the war would be a brief duration. He stressed the importance of cleanliness and that the mental attitude of the patient had much to do with his recovery.

The Secretary of War saw the desirability of having the Chimborazo Hospital function as a unit, free from the usual army routine. To accomplish this he made the institution and its grounds an independent army post, with Surgeon McCaw as Commandant. An officer of the line and thirty men were stationed there to assist him in maintaining discipline. There being no precedent for such a military post, the Secretary of War was somewhat perplexed about a suitable name for the station itself and title for its commanding officer, who was not an officer of the regular Confederate States Army. At Dr. McCaw's suggestion the institution was given the name *Chimborazo* from that of the hill where it stood, and its director, Surgeon McCaw, called *Commandant* and *Medical Director-in-Chief*. Dr. McCaw held this position during the whole existence of the hospital.

The Chimborazo Hospital, or, as we should in modern military terms call it, "The Chimborazo Hospital Centre," was built and operated not only in accordance with the best medical opinion of that day, but it will bear comparison with large military hospital centres even of the World War.



Chimborazo Hospital, Richmond, Virginia.

The hospital centre, using the modern term, consisted of five separate hospitals or divisions, thirty wards or buildings to each. A surgeon was in charge of each of the five divisions, with assistant surgeons or acting assistant surgeons in charge of the several wards or buildings. When the wounded were first brought in, soldiers were assigned to vacant beds without regard to their homes or their military organizations. Later separate divisions were appropriated to men from different sections of the country. Schedules showing where patients from

different states were quartered were published in the Richmond newspapers. This made it possible for State and private organizations to send supplies to their men and supplement those received from the Government. This organization of the hospital upon a geographical basis proved an effective means of keeping up morale. Many of the wounded and ill men were thus treated by their regular family physicians or others of whom they had heard or known. The value of this system in a provisional government with slender resources must be realized.

In the conduct of the Chimborazo Hospital the director bore in mind the fact, often overlooked by Northern historians, that the number of men of the upper classes of the South serving in the ranks was great. The division of the hospital into wards and larger units for those of each local community was appreciated by such men.

There is something inspiring about a military hospital. Any hospital demands our respect as an institution dedicated to the relief of suffering, to the restoration to health, to the demonstration of highest Christian ideals. But a military hospital is more. Here are treated not only those who have fallen victims to disease such as might occur at any place and at any time, but also those who have been but recently in the best of health but who suddenly have been stricken down by a man-made agent of destruction. They have of their own accord gone to the scene of danger borne along by idealism, by love of country, by unselfishness. In a military hospital the patients are all men—mostly young men, and in this lies the most heartbreaking cruelty of war. Schiller has said: *Der Krieg verschlingt die Besten*—war strikes down the best. And so it seems, though in the words of the Spartan, "The arrow would be of great price if it distinguished brave men from cowards." The best of the land are offered on the altar of patriotism, and even in a hospital as admirably conducted as the Chimborazo Hospital, many cannot recover. They die; they pass on to the great beyond, endowed with the grateful love of the nation which bore them. But they have something more. They are endowed with immortal youth. No matter how long parents live, their boy who has made the supreme sacrifice will never grow old to them. Had he and they lived together for a few decades, the youth would have become an old man. But once he has given his life for his country, he passes from the Realm over which Time holds sway, and he knows not decay nor decline. He enters Eternity and remains forever a youth.

As soon as the hospitals were opened, the large tobacco factories of the Grants, Mayos, and others were secured, their trade being practically at an end for the period of the war. The great boilers from these factories were effectively used in making soup in the kitchens. The factory workers were employed in the construction not only of the hospital buildings but also furniture and other equipment for them. There being, at least at first, no shortage of seasoned wood, for the tobacco factories had a large supply intended for the making of crates and packing cases, serviceable beds and other articles were made by the carpenters.

The patriotic Mr. Franklin Stearns lent the hospital his celebrated farm *Tree Hill* for the pasteurage of 200 cows and 300 to 500 goats. The latter supplied kid venison, a meat popular with the patients. A large bakery was kept in almost constant operation, having the capacity of 7,000 to 10,000 loaves daily, though even this quantity proved insufficient to insure one loaf per man per day. The grease from the "soup houses" was saved and lye brought through the blockade when possible, so that soap could be made. Beer was made on a large scale. As much as 400 kegs were brewed at a time, and stored in the caves or cellars at the eastern end of the hill.

To us who witnessed the expenditures of enormous sums of money in the construction and maintenance of military hospitals during the World War, it is a source of wonder and of admiration to read that no funds were drawn from the Confederate State Government for the conduct of the Chimborazo Hospital. The institution was entirely maintained by the commutation of rations. It had its own subsistence department, and possessed a canal boat, the *Chimborazo*, which under the command of Lawrence Lottier, plied between Richmond, Lynchburg and Lexington, bartering yarn, shoes, etc., for provisions. This was but one of the many resources of the hospital. At the close of the war the Confederate Government owed the hospital $300,000 which Mr. Memminger, the Secretary of the Treasury of the Confederate States, agreed to

pay in gold on March 29, 1865. On April 3rd, the city surrendered.

At the time of the War between the States the Chimborazo Hospital was the first military hospital in point of size in the world. The second largest was the *Lincoln Hospital* in Washington. The total number of patients received and treated in the Chimborazo Hospital was 76,000, of whom 17,000 were wounded soldiers. The Lincoln Hospital reported a total number of 46,000 patients. The *Scutari Hospital* in the Crimean War was the largest prior to the War of 1861-5. It reported a total of 30,000 to 40,000 patients.

The enormous work of the Chimborazo Hospital may be realized, somewhat, in the light of the experience of the United States Army in the World War. The Justice Hospital Centre at Toul, France, which was the largest in the American Expeditionary Forces, treated in all 67,866 patients up to the time of its closing at the end of March, 1919. It is interesting to recall that one of the eight base hospitals constituting this centre, was Base Hospital No. 45, organized at the Medical College of Virginia and commanded by Lieutenant-Colonel Stuart McGuire, U. S. A., son of Surgeon Hunter Holmes McGuire, C. S. A. of General Jackson's staff.

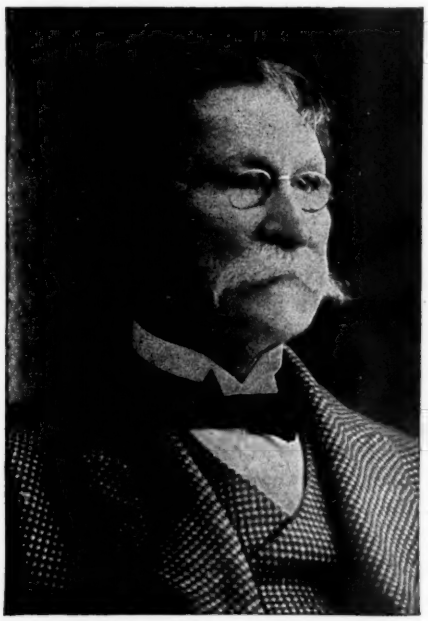
Even though we consider the shorter time of America's participation in the World War, we must likewise remember the enormously increased killing and wounding power of modern weapons and also the ravages of the pandemic of influenza. Truly great was Chimborazo, to this day America's largest military hospital.

Because of the destruction by fire in 1865 of the records of the Surgeon General's office, we cannot give the names of all of the medical officers, averaging forty-five in number, who labored for the relief of their countrymen at the Chimborazo, nor of the devoted nurses and the forty-five matrons whose skill and untiring energy made its success possible. We can give only the names of the chiefs:

Commandant and Medical Director-in-Chief:
Surgeon James Brown McCaw.
In charge of the First Division (Virginia):
Surgeon P. F. Browne, of Accomac, Virginia.
In charge of the Second Division (Georgia):
Surgeon S. E. Habersham, of Augusta, Georgia.
In charge of the Third Division (North Carlenia):
Surgeon E. Harvie Smith.
In charge of the Fourth Division (Alabama):
Surgeon S. N. Davis.
In charge of the Fifth Division (South Carolina):
Surgeon E. M. Seabrook, of Charleston.
Chief Matron: Mrs. Minge (wife of a physician).
Commissary: John Herbert Claiborne.
Quartermaster: Colonel A. S. Buford.
Chaplain: Rev. Mr. Patterson.

There were in all two apothecaries, one clerk, and one general wardmaster or assistant steward. Each division had a chief matron with three or four assistants.

"The duty of the matron," wrote Surgeon S. E. Habersham, in charge of the Second Division, "was to superintend the preparation of all the diets for the sick not convalescent, and supply it upon the requisitions furnished by the assistant surgeon of each ward; to take charge of the laundry department and see that the wards were supplied with clean bedding, etc." These women rendered most valuable services.



DR. JAMES B. McCAW,
Commandant and Medical Director-in-Chief, Chimborazo Hospital.

The task of feeding the large group of patients has been graphically told by Mrs. Phoebe Yates Pember, one of the matrons at the Chimborazo Hospital. The men were fed from the general kitchen with special provision for the preparation of special

diets for about six hundred patients in need of such care. These patients were fed from the "matron's diet list," as it was called. The ones who were in the most dangerous condition were fed from the matron's own kitchen.

As supplies became more and more scarce by the summer of 1864, the men in the ranks were always hungry. Fighting men had to be denied in order that their stricken comrades might be fed. The hospital matrons had a most difficult task to be just to all. No articles of food were wasted, and Mrs. Pember even gives a receipt for cooking rats, which she says she learned from men who had had experience. Fortunately the patients in the Chimborazo Hospital never had to be fed on such delicacies.

The conduct of the Chimborazo Hospital may fairly be called one of more noteworthy achievements in military medicine in America's history. When we consider its size, the number of soldiers admitted as patients, its successful work for four years, its excellent discipline, the tremendous difficulties that had to be overcome in the procurement of supplies, especially toward the closing days of the Confederacy, the comparatively low mortality (slightly over 9 per cent), we must recognize its director as a genius of first rank.

Despite the loss of so many of the Confederate medical records in the fire in Richmond in 1865, Surgeon S. E. Habersham, of Augusta, has left us some valuable statistics of the Chimborazo Hospital for the period October 10, 1861, to November 1, 1863. By divisions we have the name of the disease or injury, number treated, and the number of deaths. As we read today the names of the maladies, we realize the advancements in medical science, for many of the terms used are all but unknown now. Dr. Habersham concludes that the most serious diseases were: *Adynamic fevers, sloughing phagedæna, phagedæna, gangrenosa, pyæmia, erysipelas,* and the *neuralgic affections following continued fever.*

Dr. McCaw, the director of the hospital, demonstrated the truth of Osler's dictum: "Work is the master word in medicine." "Towering physically and mentally above his associates," says one of his admirers, "princely Dr. James B. McCaw, sweet, gentle, tender and true, and brave, generous and loyal, he was just, honorable and upright, an exemplar worthy of emulation."

He came of a family of physicians. The first of his name, Dr. James McCaw, of Newton-Stewart, Wigtonshire, Scotland, came to live at Norfolk, Virginia, in 1771, practicing surgery. He was commissioned a Captain by Lord Dunmore and was present at the *Battle of the Bridge.* But like some others who remained loyal to the Mother Country in the American War of Independence, his house was plundered and destroyed by revolutionists, and he was, with his family, compelled to take refuge on board a British ship in Chesapeake Bay. He took his family to Scotland but returned to America and died in New York, still in British hands, in 1778.

His son was Dr. James Drew McCaw, born in Virginia, apprentice in surgery to Benjamin Bell, of Edinburgh, where he received his M. D. in 1792, and returned to Virginia to practice his profession until his death in 1846. He had two sons who were physicians, Dr. William Reid McCaw and Dr. David McCaw. The former of these was the father of Surgeon James Brown McCaw, the Commandant of the Chimborazo Hospital.

Surgeon James Brown McCaw was born in Richmond on July 12, 1823; studied under Dr. Valentine Mott who first successfully ligated the Innominate Artery; graduated a Doctor of Medicine at the University of the city of New York in 1844; and practiced his profession in Richmond for fifty-seven years, retiring in 1901. He was for twelve years, ending in 1872, Professor of Chemistry in the Medical College of Virginia, and for the next sixteen years was Professor of the Practice of Medicine and Dean of that institution. From 1853 to 1861 he was Editor of the *Virginia Medical and Surgical Journal.* From 1864 to 1865 he was Editor of the *Confederate States Medical and Surgical Journal,* the only medical journal in the South during this period, fourteen issues having appeared in all. In April, 1871, he became one of the editors of the *Virginia Clinical Record.* He wrote many medical papers on many subjects, publishing them chiefly in the journals which he edited. A lover of music, he was President of the Mozart Society of Richmond, and was a charter member of the Medical Society of Virginia (1870). He was called "A typical Virginia gentleman of the old school, and the beloved physician of three generations." He must have had what President Eliot, of Harvard, called "the durable satisfactions of life." As three

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of his sons became physicians, Dr. Walter Drew McCaw, Dr. James Henry McCaw, and Dr. David McCaw, they represent the fifth generation of this distinguished medical family, while Dr. James McCaw Tompkins, of Richmond, represents the sixth generation. Dr. Walter Drew McCaw became a military surgeon himself, rising after a long career of usefulness to the rank of Brigadier-General. He was Chief Surgeon of the American Expeditionary Forces and of course had under his direction the many large hospitals established by the United States Army overseas. His citation for the Distinguished Service Medal states that "as Chief Surgeon of the American Expeditionary Forces, he maintained the splendid efficiency of that department at a critical time and solved each new problem presented with wisdom and marked ability." His father's mantle descended upon him indeed.

Surgeon J. R. Gildersleeve, C. S. A., a member of the staff of the Chimborazo Hospital, has left an interesting account of the circumstances surrounding the surrender of the Chimborazo Hospital when Richmond was occupied in 1865:

> "General Godfrey Weitzel's brigade of the Federal Army was in the van of the advancing army. The General rode up to the hill, and when he came through the post he was received by our whole corps of officers in full dress uniform. Dr. Alexander Mott [of New York, Surgeon of Volunteers], chief medical director of the staff of General Weitzel, exclaimed:
>
> "'Ain't that old Jim McCaw?'
>
> "'Yes,' said Dr. McCaw, 'And don't you want a drink?'
>
> "Mott's answer was, 'Yes,' and he added, 'the General will take one too, if you will ask him.'
>
> "The invitation was duly extended and accepted."

General Weitzel gave a free pass to the Commandant of the Chimborazo Hospital for himself and all of his officers, and ordered that all Confederate patients in the hospital be taken care of under all circumstances. Surgeon Gildersleeve tells us that the General even offered to place the Commandant in the general service of the United States, so that he might issue requisitions, etc., and have them honored in the same way as those of any other Medical Director in the United States Army. General Lee not having surrendered, Dr. McCaw respectfully declined this generous offer, but voluntarily continued to perform all of the duties incident to the position that he held.

Thus with scant medical supplies, for they were contraband of war, and poor facilities, the Chimborazo Hospital had been administered for three years with outstanding success and with a remarkable ratio of recoveries. It was at last turned over to the Federal troops in perfect working order, and they were not slow in giving credit where credit was due.

Dr. McCaw knew how to thwart fear and engender courage. He had the deep religious feelings which characterized the leaders of the Southern cause, and without a knowledge of which it is impossible to understand the war. "A soldier without religion," said a Prussian officer, who knew the Confederate as well as the Prussian Army, "is an instrument without value." Even the rank and file were in full accord with the great principles of the war, and were sustained by the abiding conviction of the justice of their cause.

"No one can bring a tribute of words into the presence of great deeds, or try with them to embellish the memory of any inspiring achievement, without feeling and leaving with others a sense of their insufficiency" (Oliver Wendell Holmes). We cannot do more than to mark the place where this great instrument of mercy stood, where a group of faithful men and women of our South did their utmost to repair war's broken victims, where in so doing they enabled many of the men to return to their commands and strike yet other blows in defense of their invaded country.

Nor Mars his sword nor wars quick fire shall burn
The living record of your memory.
'Gainst death and all-oblivious enmity
Shall you pace forth; your praise shall still find room
Even in the eyes of all posterity.

—Shakespeare, *Sonnets*, LV.

AUTHOR'S NOTE—This address was to have been delivered by the author on May 26, 1934, at the unveiling of the bronze tablet marking the site of the Chimborazo Hospital. On account of illness in his family, the author could not be present so that the manuscript was read by Dr. Greer Baughman, of Richmond. Miss Sally Archer Anderson, President of the Confederate Memorial Literary Society, presided and Miss Littleton Fitzgerald, chairman of the sites committee presented Dr. Baughman. The marker was received on behalf of

the city of Richmond by Colonel R. Keith Compton, director of public works. Mrs. Dabney H. Maury, daughter of Dr. James B. McCaw, Commandant of the Chimborazo Hospital, unveiled the tablet which was covered with a battle flag and a hospital flag of the Conderate States Army captured during the war, and returned to Virginia by act of Congress.

The tablet, attached to a waterworn boulder on Chimborazo Hill, is inscribed:

On this Hill Stood
CHIMBORAZO HOSPITAL
1862 — 1865
Established by
Surgeon General S. P. Moore, C. S. A.
Directed by Dr. James B. McCaw

At That Time it was the
Largest Military Hospital in the World
It Consisted of 150 Buildings and 100 Tents
And Cared for 76,000 Patients with a
Mortality of Less Than 10 Per Cent

This Tablet is Placed by the
Confederate Memorial Literary Society.

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Army Medical Library.

A DISCUSSION OF THE ETIOLOGY, PATHOLOGY AND TREATMENT OF THE PRESENT STATE OF GENERAL PRACTICE.*

T. H. DANIEL, M. D.,
Charlottesville, Va.

This paper is not a wail or a complaint against the fate of the general practitioner but is an attempt to study its condition, to investigate its etiology and pathology, and, if possible, suggest therapeutic measures that may arouse it from its coma and bring it back to a state where it can be of service in the medical sphere.

There was a time, even in the memory of some of us here, when the general practitioner was the doctor. He occupied an outstanding position in the community. He was known and loved by all; he was not only its medical advisor, but he was the friend of all his clientele. His patients looked on him as a man apart; he was the servant of the people in the best sense of the idea. And even in medical circles he was dominant. There were a few medical men who were limiting their practice, mainly in the fields of eye, ear, nose and throat, but the medical man of the day, the man of medical influence and the man whose power was felt in the profession was the general practitioner of medicine.

In the past generation, however, a great change has taken place. The family doctor no longer holds the position he once had. He has fallen from his state of eminent domain and is no longer looked upon with respect and admiration, either by the profession or by the public at large. He has lost his influence and his opinion is not sought. The profession has adopted a compromising attitude towards him and the people have lost their confidence in him. Not only this, but he has lost confidence in himself and has developed an inferiority complex that he finds difficult to overcome. The result is that but few of those who have gone through the grind of a present day medical course are will-

*Read at the sixty-fourth annual meeting of the Medical Society of Virginia, in Lynchburg, October 24-26, 1933.

ing to join the ranks of the general practitioner who has so ignobly fallen from his high estate and is wallowing in the slough of despond of lack of confidence of the public, lack of confidence in himself and of financial dependency. And so the general practitioner bids fair to become a dodo, defined in the cross-word puzzle as an extinct animal.

Pathologically we might state then that general practice shows marked evidences of degeneration—there is loss of connective tissue, the cells appear inactive, the nuclei are faded. No inflammatory exudates are found and there seems to be no attempt at regeneration.

What are the causes of this tremendous change? Undoubtedly the most influential factor has been that as medical problems were studied no one man could follow them all to their conclusion. It became necessary for men to devote all or most of their time to the study of certain phases of a subject. New discoveries demanded more time and more study and suggested other fields of investigation which occupied the entire time and thought and study of other workers. These investigators added greatly to the store of medical knowledge and were looked upon with high esteem by their confreres. Their results were studied and eagerly taken up by the profession and medical practice was greatly advanced as a result of the special work of these men. Their services were in great demand and, as was very right and proper, they asked and received greater compensation, and this was the beginning of what we now call specialism. Such specialists are needed in every branch of medicine—men who, by intense application and close study, have become masters of their chosen branches. It is from them that most of the advances have come, and it is to them that we look for new developments. Not only in research but in practice as well specialists are needed. Some cases are more difficult to diagnose and require a refinement of detail and of technique that the average medical man does not have the time to give, and such cases should be given the services of a specialist.

Thus specialism was a great boon to the practice of medicine. It not only widened the scope of our knowledge but it has greatly improved and raised to a higher standard both diagnosis and treatment of disease. Due credit was given these men both by the profession and by the laity and they received the plaudits of their colleagues, and financial reward in the form of large fees from their patients. Such a state of affairs was right and wholesome, but, like so many things, soon began to have untoward results. The public, not capable of judging when the services of a specialist were needed, rushed to him for all conditions and this chance of greater fees and greater prestige gave invitation to all sorts of men to go into this field and call themselves specialists. Without the training or background of research and scientific application and experience necessary to make them experts in their lines, they took on a thin veneer and posed before the public as specialists, and there has yet been no way devised to curb them. The only qualifications they have as specialists are that they limit their practice to some certain branch and charge high fees. The patient is led to believe that only the specialist is qualified to practice medicine and that the general practitioner has no place in the profession other than as a guidepost to direct his patients to the so-called specialists. The fact that a headache may be due to a brain tumor is emphasized so that a man with a headache does not feel easy until he has consulted a neurologist, who by lumbar puncture, encephalogram and X-ray makes the astounding discovery that the headache is due to constipation and the neurologist is due fifty dollars!

Undoubtedly specialists with their high fees have been in no small degree responsible for the increased cost of medical care about which we hear so much now and which is causing a widespread dissatisfaction with the medical profession and is driving people to the various cults. Unnecessary examinations have been multiplied to an alarming extent and the ability of the specialist is gauged, in no small degree, by the number of tests that are made. Non-protein nitrogen, basal metabolism, electro-cardiograms and other such tests have their places, and very useful places, but it is neither necessary nor wise to add the expense of such tests routinely, or where there is no indication for them.

An elderly lady of about seventy went to a nearby city to consult an orthopedist about shoes for her fallen arches. Otherwise she was in good health, but she was advised by the orthopedist to have herself checked over. She was X-rayed—head, chest and gastrointestinal tract—she was examined by eye specialists, ear specialists, nose and throat specialists, by urologists, by internists, by gynecologists, and

by psychiatrists, and the diagnosis was that she had a mild arteriosclerosis and presbyopia, and her bill was over five hundred dollars. This is but an illustration of the custom of many clinics. The great number of specialists makes it imperative that the examination be divided and subdivided so as to give each specialist a part, and thus unnecessary examinations are multiplied.

Reverting to technical terms, we might say that the exciting cause of this condition in which general practice finds itself is Bacillus Specialis, a slender rod-shaped organism of small diameter, showing a tendency to expand or dilate at the upper pole, grows very rapidly on all media, takes gold or silver stain very readily and the thicker the gold or silver stain the better it shows off.

What is the treatment and how can general practice be restored to its right and proper place in medicine? Of course it stands to reason that there should be some curb to specialism. The profession, as well as the public, should be protected against the great swarm of unnecessary, poorly prepared and money-minded specialists, and some steps will probably be taken in that line either by organized medicine or by the state examining boards.

But the real remedy must come from within the ranks of the men who comprise the great group of general practitioners. The general practitioner should realize that the status in which he finds himself is to no small degree his own fault and that it is himself he has to fight. His discouragement has let him sink into mediocrity, and, as a result, he has not kept abreast with medical progress. Being on call for twenty-four hours every day makes it hard for the general practitioner to do regular systematic reading, but there is little or no reason why the average doctor should not keep abreast with the general advances in medicine. A comparatively few hours' reading each month will keep him in touch, not with all the experiments under way, but with those advances which are of proved benefit and which could be utilized by him.

Attendance on medical meetings and post-graduate clinics will bring helpful suggestions, and contact and personal conversation with the leading men of the profession are of great help and inspire him to better work. Medicine is not a game of solitaire, and no man who tries to play a lone hand will make a success of it. One of the fundamental tenets of our profession is that any new discoveries which are of proved value shall be made available to all members of the profession, and, if the general practitioner is to help himself, he must not be slow to acquaint himself with such discoveries and improvements.

But he should study not only the work of others; he should review his own work, and this can be done only when he keeps records, which do not have to be voluminous, but should be sufficient to give him a clear idea of the progress of his cases. It is impossible to remember the details of his cases unless he has notes of them, and such records not only help him, but raise him in the estimation of his patients.

It is freely admitted in the best medical circles that the general practitioner should be able to take care of 85 to 90 per cent of all the work that comes to him. It is a duty he owes his patient as well as himself to do all he can for his patient without calling in outside help, but he must be honest and conscientious about calling consultation or referring cases to which he cannot do full justice. The accurate balancing of these two things constitute the formula for a healthy, conscientious and successful general practice. The man who is unwilling to call in help when he needs it is unworthy and should have no standing in the profession. He is unsafe; he is unfaithful to the trust that has been put in him by his patient; he is dishonest.

But there is another point that cannot be too strongly emphasized, and that is, that where we, as general practitioners, fail to diagnose a case and the specialist succeeds, in nine cases out of ten it is due, not to greater knowledge or ability on the part of the specialist, but to the fact that the general practitioner has not made a thorough and systematic examination of the patient. Several years ago the writer of this paper was attending a man who had been tubercular and was complaining of pain in the lower chest. An examination was carefully made of the chest and abdomen and a faint pleural rub and slightly palpable liver were found. The chest was strapped but this gave but little relief as did also application of heat. The case went on and the pain increased. The *chest* was repeatedly examined but nothing was found to explain the symptoms. As he had pyorrhea a dentist was called in and the teeth were removed. But this gave no

relief and, after several months, as the patient was definitely losing ground, it was decided to call a specialist in consultation. He bared the patient's chest *and* abdomen and then, before he touched the patient, nodules on the liver were easily visible and it was evident that the patient had a carcinoma of the liver, which had not been diagnosed because he had not been carefully examined for several months. The fact that nothing could have been done did not relieve the embarrassment of the attending physician, and he was not surprised when he lost the practice of that family, for he knew that he had not been careful and thorough in his work. It did not require any special ability to make the diagnosis, but it did need a careful examination. It requires no great skill to detect rales or breath changes in the patient who is run down or losing weight, but it does require a painstaking and thorough history and chest examination. Many cases of pyelitis, otitis media and early malignancies of the prostate are undiscovered only because they are not looked for, and every general practitioner *can* make microscopic urine, otoscopic and rectal examinations. The specialist leaves no stone unturned in his examination and, if the general practitioner is to come into his own, if he is to do his duty to himself and his patient, he too must make a thorough examination, and in long-standing cases these must be made repeatedly.

When the public sees the general practitioner reach the stage where he is doing thorough, careful, conscientious work, when it sees that he has acquainted himself with and is making use of improved methods, and when it sees that he is honest and conscientious about calling in help in that small percentage of cases where the services of a specialist are needed, it will not be slow to call on him and to use him, and the general practitioner will come back into his own.

The general practitioner must throw off his lethargy and substitute for his inferiority complex an aggressive attitude. He should realize that he has the most important place in medicine, for it is through him, and not through the specialist, that the problem of tuberculosis can be overcome by detecting the incipient cases; it is through his influence with the parents that the pre-school children can be protected against diphtheria; and so on through many of the great medical problems that confront us. He has a positive job and should be up and doing.

In brief, then, the treatment of the state in which general practice finds itself lies with the general practitioner himself. He should—

1. Keep abreast with proved advance in medical science by systematic reading, by attending medical meetings and clinics, and by contact with other members of the profession.

2. Keep records that will enable him to study his own cases.

3. Do all he can for his patient without calling in outside help, but be always ready to call consultation when the exigencies of the case demand it.

4. Make thorough, careful, and repeated examinations of each case that comes before him.

DISCUSSION

DR. R. L. PAGE, Batesville: I have listened with a great deal of pleasure and edification to Dr. Daniel's paper on this subject, which is a very, very acute subject. The remarks that I shall have to make will be in the light of the country practitioner, as forty-nine years of my life have been spent in that work and I have received some impressions, as you may very readily imagine.

I have seen wonderful advances made in the practice of medicine and in the care of the sick. When I first hung up my shingle in the country, to practice, I had a diploma from one of the large Northern colleges, and I was supposed to know all of medicine. I knew I did not, even the medicine of that day. Since that time such wonderful strides have been made that it has been difficult to keep even in sight of the various improvements and new theories and new light that we have gotten on the various diseases with which we come in contact. I admit, with Dr. Daniel, that at that time the country practitioner, or the general practitioner, as he is spoken of today, was highly considered. His word was law; it was accepted as the truth, whether it was the truth, or not; and I am sorry to say that in a great many instances it was not the truth. He may have been honest in thinking so himself, but he was mistaken. But conditions have changed, as we all know; and this change is something that is going on all the time. We can trace it as far back as we can trace the human race and its development. We get new light with the growth of time; we get new developments. There is a trait inherent in the human animal that we see exemplified in the lower animals; and that is the idea of going forward. We want to see what is on the other side. We who live in the country and have some knowledge of domestic animals, know that if we turn a cow or a horse into the pasture, while there may be beautiful

grass or clover at the bars, as soon as we put them in there they will take a nip of this and a nip of that bunch of grass, and look up and see something farther off that looks better, and in a short time you will see them at the very end of the pasture, on probably very short, stubby grass. They have left the best at the beginning.

Now, in the way of medical practice, the doctor who lives in another town or lives in a village or larger city, or the country, thinks that the one who lives in the city is more proficient than the one who lives in the country. Probably the man who lives in the village thinks there are better doctors in the larger town. They just go higher and higher, thinking they can find something better. I do not think the fault has been all in the general practitioner's letting down. Dr. Daniel spoke of the inferiority complex of the general practitioner of today. I do not think the young man who starts out in general practice is afflicted with an inferiority complex; it has been my experience, in my contact with them, that their complex is rather superior. If you will bear with me, and pardon a personal allusion, there is just one little incident that I shall recite. I had an outbreak of illness in a family, two children that were very ill, running high temperature, with diarrhea. I could not diagnose it. They had severe abdominal pain, and I suspected possibly typhid fever, or paratyphoid, but more probably typhoid. I frankly told the parents that I did not know what the trouble was, that I would make a further study and if I could reach a conclusion I would tell them, but I was perfectly honest in telling them that I did not know. Well, that did not satisfy them, so they suggested calling a younger doctor. I acceded very readily, and I also asked permission to call another doctor, who was, by the way, the health officer of our county. We all met there. They examined the children, each of them, very carefully. The physician who was health officer thought possibly it might be infantile paralysis (poliomyelitis); he could not think of anything else; and he took some samples of blood and took them back for analysis. He later reported that the findings were negative; he found nothing wrong with any of it. The Widal test was not negative; we had a blood test, which was reported the following day, and that was negative. The health officer said frankly he did not know what was the matter, and I naturally said I did not know. The younger doctor said, in a very positive way, "If it is not typhoid fever, it is abdominal flu." Well, I question if there is such an entity as abdominal flu; I always have. The following day the health officer returned and brought another gentleman with him. They both made a very thorough study and we all agreed that we did not know what was the matter. (I might say, in passing, the patients recovered.) Still, the younger doctor did know, and he told them something. Well, that is just by the way. I don't think all the general practitioners, particularly the younger men, are afflicted with an inferiority complex.

As to the remedy, I do not know. The public will generally get what it wants. If the people want specialists, they will have them. If they want a general practitioner to take care of them, why he is there and will do the best he can.

Those of you who have never practiced in the country back in the horse-back days, when we had to ride miles and miles in all sorts of weather, night and day, through storm and sunshine, have no conception of what the older doctors had to go through. Most of them were honest; they did the best they could with the light that they had. I admit that we did not know as much as we do now, and we do not know now as much as we ought to know, but I do think the vast majority of the general practitioners of the rural communities are honest and are doing the very best work that they know how to do. Still, that does not seem to satisfy this craving for something a little farther away, and his patrons are drifting away from him to medical centers and to specialists.

I think Dr. Daniel is perfectly right; I think the men who go into the general practice in rural communities should be just as highly trained and as competent men as practice in the cities. The country dweller is as much entitled to good medical service as the urban dweller, and I should hate to see the time come when the qualifications for practice in the country are ever lowered, so that the less well trained man will seek to practice in the country and better trained men go to practicing in the towns. The country people are just as much entitled to well-trained medical service as the people in the towns.

DR. HAWES CAMPBELL, Enfield: From the standpoint of the country physician, the cure is up to him. In our medical society, I advanced this idea: That we organize into groups of ten; that one of the group look after the financial end of the work. Every man cannot afford to put in an X-ray with fluoroscope, metabolism, and physio-therapy outfits. Let one man do this and the others patronize him. Another can devote his time to pediatrics, another to obstetrics, and so on. Later the hospital idea will develop and group practice with all its benefits will be available to the countryman.

DR. DANIEL, closing the discussion: I have no further remarks, gentlemen, except just this. I think that the average general practitioner is apologetic, and my idea is that we should get that out of our system and feel that our job is *the* job in medicine. We are the most important cog, as I said in my paper, and we should not have that apologetic idea. Stick your chest out and say: "I am a general practitioner." That is the idea I want to bring to you.

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THE DIAGNOSIS AND TREATMENT OF GAS BACILLUS INFECTION.*

C. S. STONE. JR., B. S., M. D.,
University, Va.
and
H. B. HOLSINGER, B. A., M. D.,
Farmville, Va.

Millar[1] has recently reviewed the subject of gas bacillus infection in civil practice and found a total of 607 cases exclusive of obstetrical infections, reported in the literature from the beginning of the bacteriological era to 1930. This review leaves the impression that gas infection or gas gangrene is rarely seen in civil practice. Although in some districts gas infection appears to be a surgical curiosity, in others it is a relatively frequent occurrence.[2, 3, 4] At the University of Virginia Hospital this condition is encountered so frequently that a review of our cases seems desirable.

Sixty-seven cases of gas infection were seen in this clinic in the interval from November 1, 1921, to July 1, 1933, which represents a frequency of one case in every 1035 admissions to the hospital. The frequency of gas infection during this interval is shown in Table 1. The increase in the number of cases after 1926 is difficult to explain. The increasing number of automobile accidents, with the attending injuries contaminated with dirt of the highways, may be partly responsible; the infection may be more common now than formerly.

TABLE I.

YEARLY INCIDENCE OF GAS INFECTION

Year	*Total Yearly Hospital Adms.*	*No. of Gas Cases*
1921 (2 Mo.)	552	2
1922	4288	3
1923	4622	1
1924	4767	2
1925	5625	3
1926	5477	1
1927	6211	6
1928	6576	6
1929	6825	12
1930	7215	4
1931	7446	15
1932	6834	10
1933 (6 Mo.)	2886	2
Total	69324	67

One gas infection in each 1035 hospital admission.

*From the Department of Surgery and Gynecology and the Department of Orthopedic Surgery of the University of Virginia Medical School and the University Hospital.
Read at the sixty-fourth annual session of the Medical Society of Virginia, in Lynchburg, October 24-26, 1933.

The type of wound in which these infections occurred is shown in Table 2. The greatest absolute number of infections, which also represents the highest frequency (12.3 per cent), is seen in compound fractures. In the twenty-six cases in this group three fractures were caused by firearms. Gunshot wounds were the second most frequent cause, with a frequency of 6.1 per cent. Lacerated wounds were the next most common cause, but it was impossible to estimate the percentage frequency because so many wounds of this type were treated entirely in the out-patient department. Gangrene of an extremity, the result of arterial occlusion was the predisposing cause in nine cases, and there were also three cases of wound infection following operative procedures on the large bowel, and three cases of gas infection complicating pregnancy, in this series.

Fifty-two, or 77 per cent of the sixty-seven cases followed traumatic injury in which there was gross contamination of the wound. It is in this type of wound that the majority of all gas infections develop.

The purpose of this paper is to discuss the etiology, diagnosis and treatment of gas infection in this group of cases.

Etiology. The B. Welchii is usually the only organism isolated in gas infection. However, it

TABLE II

DISTRIBUTION AND FREQUENCY OF GAS INFECTION

Type of Wound in Which Gas Infection Developed	*No. of Gas Infections*	*Total Number of Wounds*	*Incidence of Gas-Cases*
Compound Fractures	26	210	12.3%
Gun Shot Wounds	17	377	6.1%
Lacerated Wounds	9		
Arterial Gangrene	9		
Abdominal Wound for Intestinal Operation	3		
Obstetrical Infections	3		
Total	67		

has been shown[5] that the Vibrion Septique is frequently present. Other organisms have been identified with gas gangrene, but they are all very similar to the Welch bacillus, and may be referred to collectively as "gas bacillus."[6]

The gas bacillus is an obligate anaerobe, and grows only in the absence of oxygen, and in the narrow temperature range from 20 to 45 degrees centigrade.[7] The spores formed by these organisms, however, are very resistant to drying, temperature changes, etc. The organisms are found in cultivated soil, the dirt of streets and highways, and in human and animal excreta. Gage[8] has found them in all types of woolen goods, and in the wadding of shotgun shells.

In each of the fifty-two cases in this series there was gross contamination of the wound. In addition to the dirt of the clothing, there was contamination with dirt of the highways in ten cases; with dirt of the fields or woods in twenty cases; with fecal matter through perforation of the intestine in three cases; with the wadding of shotgun shells in thirteen cases; in seven instances pieces of clothing were found in the wound.

Gas bacillus infection is essentially an infection of muscle. The development of the infection in the main depends upon the presence of organisms in a wound in which there is traumatized muscle which is inadequately supplied with oxygen. Shock and hemorrhage, so frequently associated with traumatic injuries are contributory factors in the development of gas infection.

The diagnosis of gas infection can be made between the eighteenth and one hundred and twentieth hour after injury in most cases, but usually the signs of the infection are present within the first forty-eight hours. Delayed infection was encountered in only two cases in this group, the incubation period being twelve and fourteen days respectively. Excluding these two cases the average incubation period in forty-six cases was forty-four hours.

It is difficult to classify the different signs of gas infection in the order in which they appear, because there is no sequence of signs or symptoms that is constant. There are two signs, however, that are commonly observed at the onset of the infection. The first of these is a rapid pulse, usually around 120, which is more rapid than would be expected from the patient's general condition. The increased pulse rate is not necessarily accompanied by a similar rise in temperature.

The second sign is swelling, accompanied with pain in the injured part. Pain of short duration followed by numbness has been emphasized by Taylor[9] as suggestive of gas infection. It is striking that most patients with gas infection remain clear and alert mentally and show little concern about their serious condition. Euphoria is marked not only at the onset of the infection but may persist to within a few moments of death.

One of the cardinal signs of gas infection, though not usually an early one, is crepitation, or the crackling sensation imparted to the fingers on palpation of gas-containing tissue. The presence of gas in the wound itself may be demonstrated by pressure with the flat of the hand in the direction of the wound. Though gas is often present in the tissues early in the course of an infection, its presence may be masked. In suspicious cases the X-ray may be helpful in showing gas bubbles in the soft parts. An occasional case is encountered in which there is no gas in the tissues.

The odor associated with gas infection is characteristic. It is putrefactive, offensive, almost indescribable, but once encountered it will never be forgotten. The odor is often a very early sign, but at times it is not detected until the wound has been opened.

There is a fairly characteristic discharge of thin, dark serosanguineous material from the wound, which is loaded with organisms.

Wallace[10] has studied the color changes that occur in the skin and muscle in gas infection. He states that at first the skin has a pale appearance, due simply to the tenseness of swelling. This is succeeded by a dirty cream tint, which may be taken to indicate that gangrene is definitely established. The subsequent changes are quicker and more dramatic. Areas of purple staining appear, which are irregular but distinct, and which enlarge and coalesce. Soon blebs filled with blood stained fluid appear, the purple color then quickly becomes a deep greenish yellow, which is the final stage of gangrene.

The color changes in the muscle are equally distinctive but more rapid in their development. The muscles first take on a glistening yellow appearance, which soon changes to purple and then the

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deep grennish yellow color of the final stage. The connective tissue may be similarly changed.

It must be borne in mind that early diagnosis is imperative, and while the color changes and the gangrene are characteristic, they are late signs. Any contaminated wound in which the early signs are noted should come under suspicion, and attempts made then to substantiate a diagnosis by demonstrating the organisms in smear or culture. Diagnosis by smear is preferable to culture because the delay in obtaining a report on the culture means invaluable time lost from treatment.

Treatment. Since the development of gas infection hinges on trauma and contamination of tissue it is pertinent to discuss the initial treatment of such wounds. As soon as feasible, all traumatized tissue possible should be excised, all loose pieces of bone, foreign bodies, pieces of clothing, and blood clot should be removed from the wound. Tight closure or packing of the wound should be avoided. Shock, of course, should be treated first, and any marked blood-loss incident to the injury should be made up by transfusion as soon as possible.

The surgical treatment of wounds in which gas infection is present was explicitly outlined by the Medical Corps of the United States Army[11] just before the battle of Chateau Thierry. This outline in the main applies to civil cases today as well as it did to the war wounds of yesterday, and is quoted here in part with some amplification.

1. Operate as early as the diagnosis is made.
2. In cases in the extremities avoid the use of tourniquets.
3. Make incisions longitudinally, and half again as long as thought necessary in both skin and fascia.
4. Go between muscles rather than through or across them.
5. Excise all discolored, noncontractile muscle, and all other infected tissue. By the removal of an entire infected muscle or group of muscles, the spread of infection may be stopped, and amputation may at times be avoided.
6. Leave the wound wide open. Dress the wound with gauze, laid in, not packed in.
7. Carrell tubes should be placed deep in the wound for purposes of irrigation only if it is sure that they will be properly cared for.
8. Parts that have inadequate blood supply, or those in which gangrene is already present, should be amputated at once.
9. When amputation is necessary, disarticulation should be done when feasible. If this is not possible, the guillotine amputation is the operation of choice.

In addition certain other procedures are of importance in the treatment of gas infection. Because of the anaerobic nature of the causative organisms, oxidizing agents are of value. Potassium permanganate and hydrogen peroxide have been widely used, the latter also because of mechanical cleansing of a wound by its bubbling action. Dakin's solution has been popular. These solutions can be used as irrigants if Carrell tubes have been placed in the wound, and irrigations should be done every two or three hours. They may also be used to advantage in wet dressings on wounds in which tubes cannot be placed, such as amputation stumps.

In most gas infections there is a rapid destruction of red blood cells by the hemolytic toxin[12] formed by the gas bacillus. Frequent transfusions are helpful in combating this condition.

The use of specific antitoxin in the treatment of gas infection was begun during the World War. A polyvalent antitoxin is now available in fifteen cubic centimeter ampules containing 10,000 combined units.* This serum is sold under the name of Perfringens antitoxin. Five thousand units is considered a prophylactic dose, and twice that amount a therapeutic dose.

The use of serum as a prophylactic agent has been widely urged.[13] Although it is not as efficient in the prevention of gas infection as tetanus antitoxin is in the prevention of tetanus, it is felt that there is sufficient evidence of its value to justify its use in the prophylactic treatment of badly contaminated wounds.

Serum plays a far more important role in the treatment of a fully developed infection. Following the use of serum, the temperature and pulse rate fall, and there is a striking improvement in the patient's general condition. This is not lasting, and repeated injections are necessary. The usual therapeutic dose is 10,000 units of polyvalent serum,

***Formerly a less concentrated polyvalent serum was used in this clinic. This serum, sold also under the name of Perfringens antitoxin, was supplied in 50 and 100 c.c. bottles. One c.c. was equivalent to one unit. The prophylactic dose varied from 12.5 to 100 c.c. The therapeutic dose was 100 c.c. Reference to this serum is made in Table IV in the treatment of cases seen prior to 1931.**

which may be repeated two or three times a day, depending on the severity of the infection, and should be continued as long as there is any evidence of gas infection. It is believed that the intravenous method of administration of serum is best, and it is easily given by adding the serum to a suitable amount of normal salt solution. However, intramuscular administration is satisfactory.

It must be emphasized that serum in no way supplants surgery in the treatment of gas infection. Early adequate debridement is the most important single factor in the prevention of infection, just as surgery is the most important part of the treatment of the infection. Serum can be considered an adjunct in the treatment, but when combined with surgery, it may have a marked influence on the outcome of the infection. It is felt that the value of serum is reflected in the lower mortality in a selected group of cases in this series that were treated with antitoxin.

Mortality. There were seventeen deaths in this series of fifty-two cases, a mortality of 32.4 per cent. In one of the fatal cases death was caused by amoebic abscess of the liver, three months after the gas infection had entirely cleared up. Three fatal cases were gunshot wounds of the abdomen, in which there was gross soiling of the peritoneum because of multiple perforations of the bowel. The extent of injury in these cases was in itself more than enough to cause death. Gas infection developed in the margins of the abdominal wounds a few hours before death. These four deaths can scarcely be considered the result of gas infection, and if they are not included, the mortality is 25.0 per cent.

Thirty-nine of the fifty-two cases received serum in adequate dosage as part of the treatment. Of these six died, a mortality of 15.3 per cent. This figure is suggestive of the value of serum as a therapeutic agent.

DISCUSSION

Since gas infection is the most serious complication of traumatic wounds, the initial treatment of such wounds should be directed toward prevention of infection. The war experience clearly showed the importance of early and complete debridement of contused wounds in the prevention of gas infection. Largely by this means the incidence of gas infection in the British Army[14] was reduced from twelve to fifteen per cent in the first year to one and six-tenths to three per cent in the last year of the war. It is obvious, however, that in the more severe wounds, in which the soft tissues are badly lacerated, where dirt is ground into the tissues, where blood supply to the part may be destroyed or badly damaged, gas infection may develop regardless of any treatment short of amputation, and sometimes even then. It is difficult to practice in civil surgery the radical procedures that may seem commonplace in war surgery. Justifiable efforts to save an extremity may be reflected in the incidence and mortality of gas infection.

There are several points in the diagnosis and treatment of gas infection that bear re-emphasis. First, any traumatic wound may develop gas. It is important that such wounds be observed closely in order to detect the infection at the earliest moment, should it occur. Close observation is imperative because of the rapidity with which this infection may develop. Secondly, immediate treatment of gas infection is essential since it is a most urgent type of emergency, being second only to active hemorrhage. Early diagnosis is therefore imperative, and one must be on the alert for unusual pulse rise, or any unusual swelling or pain in the injured part. Thirdly, should such conditions, suggestive of gas infection develop, it then becomes necessary to open the wound in an effort to confirm the diagnosis, by finding the organisms. Smears should be made for immediate study, because delay in waiting for a report on a culture is valuable time lost in treatment.

The prognosis of gas infection depends on early diagnosis and treatment. If gas and actual gangrene are present before treatment is begun, the outlook is less hopeful than it is if these findings are not present.

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DISCUSSION

DR. I. A. BIGGER, Richmond: I would like to congratulate Dr. Stone upon his very excellent presentation of this interesting and important subject. He has covered it so fully and our ideas are so similar, that I have little to add. There are, however, one or two points, particularly with regard to treatment, that I would like to emphasize. The first is that I do believe in the prophylactic administration of gas-bacillus antitoxin. It is very difficult to prove its value when so administered, but I have gotten the impression that its administration as a prophylactic measure is of definite value. We have had two patients in the hospital who received a prophylactic dose of gas-bacillus antitoxin soon after the injury, and both developed gas-bacillus infection. Both had extensive wounds and both had associated streptococcus infection, which always makes the prognosis more serious. In spite of this, the gas-bacillus infection was mild and both patients recovered under conservative treatment. This does not prove anything, but it suggests that the prophylactic administration of gas-bacillus antitoxin may decrease the virulence of the infection even though it does not prevent it. I also believe that the antitoxin is of value in therapeutic doses, if given early in the disease.

Conservative treatment should be carried out in gas-bacillus infections whenever possible. When it starts in an extremity at some distance from the trunk, the patient should be given a therapeutic dose of the antitoxin and watched carefully to determine the rate of spread of the infection. If the spread is slowed up or stopped, conservative treatment should be continued; but if the infection continues to spread rapidly, amputation had best be done.

DR. M. B. HIDEN, Warrenton: I have had three cases of this infection within the last three years, which is a good many for one doctor. Two died, and one got well. One, a policeman, had a consultant from Washington, a large amount of antitoxin, three amputations, and then died. Another, a young girl, was treated by the extensive use of iodin. I went to Washington and was called back; they said the wound did not look right. When I got back I found that gas infection had developed. I amputated the arm at the shoulder. There was gas in the tissues; the gas extended down the side of the chest, but the child got well.

When you have gas in the tissues, you do not always have gas-bacillus infection. As you realize, when you have a wound of the chest, the lungs may pump air into the tissues, and it is remarkable how far from the site of the wound this gas will extend. The author of the paper, in closing, I think will verify the fact that in wounds around the lungs, where there is gas in the tissues, you should be very careful how you call that gas-bacillus infection.

DR. G. PAUL LAROQUE, Richmond: I do not remember whether Dr. Stone mentioned the fact that gas-bacillus infection occurs in other things than trauma. I have seen it in two cases of ruptured appendicitis and in one case following amputation for gangrene. It is well known that it may develop in cases of diabetic gangrene.

DR. M. H. TODD, Norfolk: The X-ray will sometimes make the diagnosis of gas-bacillus infection. There is a little confusion that may sometimes arise: in a contused wound we may sometimes see little bubbles of air out in the tissues; but in gas-bacillus infection you do not see the gas at once but see it after a day or two. And, of course, it spreads. If you wait an hour or two and take another X-ray, you will see it has spread out farther in the tissues.

That is a point I want to make—that you can make the diagnosis by the X-ray.

DR. STONE, closing the discussion: Although it is not shown by this study, we have seen a good many cases in which the administration of gas-bacillus antitoxin has seemed to be of therapeutic value.

In regard to air in the tissues, attention has been drawn to the air that is often trapped in the tissues, particularly in compound fractures, or wounds caused by blunt instruments. I think it is important, in differentiating between trapped air and the gas of gas-bacillus infection, to consider the length of time that has elapsed between the time of the injury and the appearance of this air in the tissues and also what procedures have been followed in treating the wound.

This discussion was limited to traumatic cases merely because of the greater frequency of gas-bacillus infection in such conditions. We have seen this condition in several cases of arterial gangrene of an extremity which have not been included in this report.

THE MANAGEMENT OF ACUTE CORONARY OCCLUSION.*

WILLIAM B. PORTER, M. D.,
Richmond, Va.

Acute coronary occlusion is one of the true emergencies seen by all who are engaged in the practice of medicine. It is, of course, essential for one to be able to recognize the malady in all of its bizarre and elusive manifestations, yet it will profit the distressed patient little if the diagnosis is merely a tag of identification. An adequate foundation for rational therapy must rest on an understanding of the changes taking place in the heart and a keen appreciation of the resulting varied disorders of function and how they are affected by certain remedies.

When a coronary artery is occluded the blood supply to an area of heart muscle is cut off because collateral circulation is quite imperfect. The immediate results depend upon the distribution of the occluded vessel and upon the size of the resulting myocardial infarct. It is too well known that instant death may and frequently does occur so suddenly that therapeutic effort is precluded. Escaping this tragic event, the patient faces others of immediate importance, and the outcome of the case often depends upon an understanding of their nature and their effect upon the heart and patient.

Circulatory collapse, similar in its essential nature to that noted in traumatic shock, induced by the severe pain and trauma to the heart, is a frequent and outstanding event and may prove fatal in the first twenty-four hours. The clinical situation in its fundamental nature is not unlike that seen in traumatic shock due to a crushing injury to the liver or other vital areas of the body.

When the area of heart muscle involved is sufficiently large or the accident has occurred in a heart already extensively diseased, heart failure of the congestive type may follow and death may occur after a varying period of progressively increasing degree of cardiac invalidism; and as a rule therapy has little effect on its progressive downward course toward a fatal termination.

Fortunately the usual situation which one has to approach therapeutically is represented by the patient who escapes a fatal outcome during the first twenty-four hours, and who recovers from the initial circulatory shock and becomes free from pain with slight or no evidence of heart failure of the congestive type. During the succeeding five to eight days certain changes of the greatest clinical importance are occurring in the infarcted area. Muscle tissue is dying and the irritability of the surrounding muscle is greatly increased, to the end that ventricular tachycardia or fibrillation (somatic death) may occur either spontaneously or be induced by the unwise use of drugs, notably the digitalis group, as "cardiac stimulants." Experimentally and clinically this is a real danger and all too frequently this well estabished truth is ignored in the treatment of coronary accidents. At the conclusion of the first ten days after a coronary occlusion, two accidents must be anticipated. Mural thrombus formation inevitably occurs over the area of myocardial infarction if the lesion involves the ventricular endocardium. Dislodgment of pieces of the thrombus is common, resulting in embolic infarcts in various areas of the body, especially the brain, kidney and spleen. I have observed also embolic occlusion of the brachial, posterior tibial, and in one instance of a branch of the superior mesentery artery. Rupture of the ventricle due to a weakening of its walls following necrosis of the infarct is an accident liable to occur any time after the first week and one is never free from this possibility until at least eight weeks have elapsed after the onset of the primary accident.

This brief and incomplete survey of the possible events occurring in the wake of coronary occlusion has been designed primarily to give a setting for a rational approach to the therapeutic management of acute coronary occlusion. As has already been stated, a definite number of those individuals who have occlusion of one of the important coronary vessels die so suddenly that no medical aid is possible. They represent that interesting group appearing in the daily press as having met death from "acute

*Read before the sixty-fourth annual session of the Medical Society of Virginia, at Lynchburg, Va., October 24-26, 1933.

indigestion," or who make their first medical contact with the coroner. This type is manifestly eliminated from the stage of therapeutic action.

If one approaches therapeutically the remaining group during the first week of illness with the clear understanding that the problem is one demanding the use of the same measures commonly employed in physical trauma to an important viscera; and if the measures he uses are chosen with care to the end that pain, circulatory collapse and shock are effectively combated; and if everything is designed to render less liable disturbances of the heart mechanism which may prove fatal, he will give the patient his rightful opportunity for recovery. The first and foremost indication is that pain must be relieved,—otherwise death is inevitable. Morphine sulphate is the drug of choice and its use must be in doses sufficient to secure relief. It is difficult to indicate specifically how much morphine is safe, but we have on one occasion given three grains to a patient over a period of seven hours. On two occasions it has been necessary to use nitrous oxide and oxygen for the relief of pain, and in each instance the relief was complete and both patients recovered. Nitrous oxide and oxygen is the anesthetic of choice for it is free from the objectionable effects on the heart and blood pressure inherent in other general anesthetics. The use of oxygen in high concentration 40 per cent to 50 per cent has recently been advocated by Riser[1] for the relief of pain. We have had a limited experience with its use and the impression is that some modification of pain, shock and cyanosis was undoubtedly secured. If circulatory collapse and shock continue as conspicuous aspects of the clinical picture after the relief of pain has been secured, concentrated glucose in 50 per cent solution should be administered intravenously, in repeated doses of 20 c.c. every two to three hours.

The question which creates the greatest amount of anxiety is concerned with the use of stimulants in coronary occlusion, for they are usually prescribed and most frequently digitalis is the one of choice. An unequivocal answer cannot be given at this time, yet there are certain definite data very pertinent to the problem. The principal action of digitalis is on conduction and its greatest usefulness is the protection of the ventricle from ectopic stimuli in auricular fibrillation, a condition rarely occurring in coronary accidents. Increasing tonicity and force of contraction are lesser actions of digitalis, and this action is probably observed only in special types of heart failure due to myocardial fatigue and exhaustion. It would be futile to attempt stimulation of a portion of the heart muscle which was undergoing ischemic necrosis and illogical to increase the force of contraction of the uninvolved muscle which is already seriously handicapped by the shock induced by trauma to the neighboring heart muscle fibers; and, even if the force of cardiac contraction were increased, it would be a doubtful benefit, for it would merely increase the strain on the weakened ventricular wall, rendering more liable rupture or aneurysmal formation. During the first five to seven days the most common mechanism of death is probably the development of ventricular fibrillation and not heart failure of the congestive type. Since the original work of Robinson and Herrmann[2] on the action of digitalis in coronary occlusion, it has been known that the ability of this drug to increase the irritability of the ventricular musculature is greatly augumented by myocardial ischemia. In 1926, I reported[3] a series of clinical observations confirming this work and showed that ventricular tachycardia was frequently induced by digitalis in doses well below the calculated basal requirements when used in patients who have coronary disease with relative or absolute myocardial ischemia. It is highly probable, therefore, that digitalis may actually increase the liability to the development of the most common fatal event following coronary occlusion, a fact that must be carefully weighed against the doubtful advantages following its administration. In general, there are many reasons why digitalis may do harm and unless clearly indicated by auricular fibrillation which is rare, or serious heart failure of the congestive type which is usually irreducible, it should be omitted entirely in the treatment of acute coronary occlusion during the first seven to twenty days after the onset of the accident. It is my practice to begin quinidine sulphate, 3 grains three to four times each twenty-four hours, after the first twelve hours and this is continued for at least four weeks. It is used in the hope of preventing the all too frequent sudden death from ventricular fibrillation. Theobromine sodium salicylate, or theobromine calcium salicylate, supposedly have an effect upon coronary blood flow, augmenting the minute volume of the coronary circulation. Drugs of this class have become extremely popular in recent years and numerous observers have reported favorable results

from their use in the "angina of effort," suggesting that improvement of coronary circulation was accomplished. It would seem logical, therefore, to prescribe the theobromine derivatives in coronary occlusion, with the hope of promoting collateral circulation and improving the coronary blood flow to the myocardium in general. There does not appear to be any contraindication to their use, and my impression is that benefit may logically follow. Some patients experience distressing gastric irritation after taking the drug, yet most patients can comfortably consume 60 grains of theobromine calcium salicylate divided equally in four doses each twenty-four hours. The drug should be continued for two to three months, interrupting its administration for a few days if the stomach is disturbed.

No attempt will be made to discuss the care of the patient beyond the period of "acute coronary occlusion" which is usually concluded by the tenth day. It is, however, at this point that the patient becomes his own worst enemy, for he is restless to be up and about that he "may regain his strength"; yet too much emphasis cannot be given to the necessity for prolonged and absolute bed rest. There is no reliable criteria which will enable one to judge whether there has been a large or small infarction, nor how long it takes for healing to occur. We have followed several patients with heart wounds who have had coronary vessels ligated and in these the electrocardiograms did not return to normal in a single instance in less than eight weeks. This is highly significant, for the patients were young men with normal coronary vessels, a situation quite unlike that existing in those with spontaneous occlusion of a sclerosed coronary vessel. Our practice is to consider eight weeks of bed rest the minimum, regardless of the apparent mildness of the initial symptoms.

SUMMARY

The evidence gained from a study of wounds of the heart with injury to important branches of the coronary arteries indicates that complete healing of the induced infarct requires at least ten weeks. It is reasonable to conclude that infarcts following spontaneous occlusion of diseased vessels require even a more prolonged period.

It is doubtful whether "stimulants" of the type represented by digitalis should ever be used in acute coronary occlusion. The reasons for this conclusion have been presented in detail and there is strong evidence suggesting that illogical therapy may augment the liability of the primary mechanism of death, namely, ventricular fibrillation.

The fundamentals of the therapy of acute coronary occlusion are the prompt and complete relief of pain; the control of shock; the promotion of adequate coronary blood flow; the lessening of the liability to fatal ectopic ventricular rhythms, and absolute and prolonged physical and mental rest.

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DISCUSSION

DR. W. H. HIGGINS, Richmond: Any disease which has an immediate mortality of from 16 to 25 per cent and a mortality of 50 per cent over a period of two years is one which should command the most serious consideration of every physician who comes in contact with sick people, regardless of his specialty. Acute coronary occlusion, to the medical man, is in many respects what cancer is to the surgeon, and it should be looked upon in the same manner so far as the prognosis and the high mortality are concerned.

After hearing Dr. Porter's description, so admirably given, of the pathology underlying an attack of acute coronary occlusion, the question of the treatment can be boiled down under two headings: first, the question of rest, and, second, the question of drug therapy. Many of us who have seen these cases in their acute attacks are goaded on, so to speak, by the anxious family to do something immediately, and, before we find ourselves, we often have introduced many lines of therapy which are more or less inimical to the well-being of the patient. So the question is largely what we should not do rather than what we should do. When you consider that there is a circumscribed area of the heart muscle with the blood supply cut off and impending necrosis, you can see there is little we can do. But certainly one of the things we can do is to give the patient absolute rest. That means not only having the patient go to bed, but seeing that he is absolutely quiet in bed. If the case is one with profound involvement of the heart, turning over or moving his arms should be prohibited. Often we have patients who have their attacks in the homes, and the physician, in his eagerness to give them the best possible care, immediately sends them to the hospital, introducing an element of exercise and strain which is not justifiable.

XUM

Dr. Porter has emphasized the value of giving large doses of morphin, where necessary, to secure freedom from pain.

Under therapy, the first heading is rest, and the second heading is avoidance of stimulants—the so-called cardiac stimulants, digitalis, caffein, strychnine, and other drugs of that kind. Digitalis seems to be in general use, and in thinking over those cases which I have seen with other physicians I have yet to find one which has not been started on digitalis from the very beginning. As Dr. Porter has emphasized, we are probably introducing an element which would tend to do harm rather than do good; and in these early cases, certainly, I feel that digitalis is not the drug of choice.

As to quinidin, if there is no fibrillation at the start, I am not disposed to use quinidin. My feeling is more of a "hands-off" policy when the heart is still having its normal rhythm, rather than introducing a drug the individual susceptibility to which we are not certain. There have been reports from time to time of more or less disastrous results.

I think there is sufficient experimental evidence to show that we do get some increased blood flow through the coronary vessels from theobromin or one of its compounds, and I believe it is a drug which has value and should be used over a period of a number of weeks.

If the patient survives the first few days, the question of trying to help to restore some of the damage to the heart muscle is one which comes under consideration. The use of dextrose solution in small quantities has some experimental evidence in its favor, and I think it is probably something that should be considered in cases where we have evidence to make us feel that its use might be of help.

I feel that drugs are second in importance to rest for the patient. Prolonged rest, which not only covers the acute illness, but which goes on for a number of weeks afterward, is the most essential factor, because where a man has had acute coronary occlusion he has an impaired heart and will always have an impaired heart, and the longer we can keep him absolutely free from physical and mental strain the better are his chances of establishing a satisfactory collateral circulation.

Dr. Porter's presentation is very practical. From the large number of cases we see, I think it is a condition with which every physician should be entirely familiar; and with the judicious care which Dr. Porter has outlined I think we can save some patients who would otherwise come to a rather early fatality.

DR. N. G. WILSON, Norfolk: Please let me say a word in regard to quinidine. One who has seen a patient die as the result of administration of this drug has a very wholesome respect and fear for its unhappy effects.

When I referred to Dr. Scott's use of quinidine in his case report, I had in mind particularly the fibrillation in an elderly man with manifest cardiovascular disease without preliminary digitalization.

At the moment of restoration of normal rhythm there is an instant of ventricular standstill which, in a subject with a badly damaged myocardium, creates a very dangerous situation. In my work, at least one such disaster has occurred, and I rarely allow an opportunity to emphasize the danger of its possibility to pass unnoticed.

The literature regarding the use of quinidine abounds in just such warnings as I have voiced.

DR. PORTER, closing the discussion: It is absolutely imperative that certain questions referable to the use of quinidine be clarified. During the discussion the word "fibrillation" has been constantly used. No distinction has been made between auricular fibrillation *versus* ventricular fibrillation. I have the impression that some of the discussors do not have a clear conception of the fundamental difference between these two conditions. Ventricular fibrillation is in reality clinical death and is only noted by the electrocardiograph. It is probably the mechanism of death in the majority of patients who succumb following coronary occlusion. Experimentally this mechanism of death can be prevented by the use of quinidine prior to the ligation of a coronary vessel. In my paper I have recommended the use of quinidine with the idea in view of warding off the occurrence of this fatal arrhythmia during that period when the irritability of the ventricular musculature has been greatly heightened by the infarction. I will not discuss the use of quinidine in *auricular fibrillation* for the reason that this is a special subject and would require more time than I have allotted to me at this time.

OBSERVATIONS ON NASAL ALLERGY.*

OSCAR SWINEFORD, JR., M. D.,
University, Va.

Nasal allergy is an extremely common cause of human suffering. It forces perhaps 1 to 2 per cent of the population to seek medical attention at some time in their lives. Nasal allergy is manifested as hay-fever and termed perennial if its manifestations occur at any time, and seasonal if present only at some particular time of the year. The terms atopic coryza, allergic rhinitis, vasomotor rhinitis, hyperesthetic rhinitis, and rose cold are also widely used. From habit we use the terms vasomotor rhinitis and perennial hay-fever interchangeably.

*From The Allergy Clinic, Department of Internal Medicine, University of Virginia Medical School.

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A brief review of the fundamental concepts of the allergic process and an application of them to the pathological physiology of the nose will precede some comments on the diagnosis and treatment of nasal allergy.

The progress which has been made in the field of allergy in the last twenty years is remarkable. Clinical results, obtained by the application of rational diagnostic and therapeutic methods, have improved far more rapidly than in almost any other branch of medicine. There is still much to be learned but it is doubtful if so much of practical value has been accomplished in any field so broad. For example, we know that the allergic individual is born with the capacity for becoming sensitive in some parts of his body to some thing or things; that the sensitized parts may react to substances inhaled, ingested, injected, or absorbed from an infectious focus; that the substances to which they become sensitive may be harmless *per se* and are usually such simple things as animal epidermals, pollens, foods, drugs, chemicals, sera, bacterial products; that the reaction produced by the contact between sensitizing substance and sensitized tissue is an antibody-antigen reaction and is characterized by smooth muscle spasm plus exudation, in varrying degree; that the severity and frequency of the reactions are influenced by a number of less specific factors such as fatigue, constipation, focal infection, acute infections, emotional states, temperature and humidity changes, etc., which often seem to be and perhaps may be more important clinically than the specific allergen-antibody reaction; that the specific allergen can be determined often and easily by skin tests and history, less often and less easily by statistical avoidances; that the reaction between allergen and antibody seems to be highly specific at first but may eventually assume the characteristics of a "trigger mechanism" capable of being "set off" by non-specific influences; that the reaction will cease to occur if the specific substances are avoided or removed or, if the sensitized area is desensitized or immunized against the sensitizing substance; that the nose is as frequently the site of the allergic reaction as any other part of the body.

The anatomy of the nose is such and normal variations are so great that it is no wonder that slight variations from the normal volume of the mucosa produce trying symptoms. It is known that the nasal mucosa varies in volume normally under the influence of, distant or local, external or internal temperature reflexes, and of emotions. The volume varies abnormally with vasomotor instability, as in the menopause or thyrotoxicosis or focal infections, as well as from local irritations from infection or allergic reactions. The normal variations may be excessive in the presence of spurs or deviations of the septum, etc. Whenever the nose is small and the stimuli to congestion great, the breathing space becomes limited and symptoms of nasal obstruction occur. It is doubtful if the cause of most specific instances of nasal congestion could be identified were it not for available concomitant diagnostic information such as the finding of pus, the menopausal syndrome, a positive allergic history, evidence of thermal hypersensitiveness or emotional strain. It would seem then that there are other influences than infection and hypersensitiveness to an allergen which can produce continued nasal congestion.

With this preamble, it is not difficult to predict that the allergic reaction of edema plus smooth muscle spasm in the loose erectile tissue of the mucosa of the narrow space of the upper nasal passage will produce blockage of the air passages, a thin discharge, and local irritation with resultant sneezing and burning, which may be paroxysmal or continuous, occasional or frequent, mild or severe. It is also easy to predict that the mucosa will be pale and boggy and that if this condition persists the membrane will degenerate and that all of the nasal functions will be impaired and that the resistance of the sinuses to infection will be lowered. It is less easy to predict the distant effects, which are, however, of extreme importance, viz.: (1) The nasal blockage causes mouth breathing which in turn results in irritation and congestion of the bronchial mucosa from the increased work of warming and saturating the inspired air, an increase of about 50 per cent over the normal basal work of the bronchial mucosa. (2) The nasal blockage interferes with the proper function of the delicately adjusted heat regulating mechanism, necessitating a redistribution of the functions of heat loss or conservation between the bronchi, skin, sweat glands, urine, etc. (3) The swollen mucosa of the nose may press upon the "asthmagenic area" of the nose, giving rise to impulses carried up the sensory path-

way to the vagus nucleus, thence out the vagus pathway to the bronchi and intestines as vagotonic, i. e., spastic impulses. (4) Secondarily infected sinuses, already mentioned, frequently serve as foci of infection. (5) The lymphatic drainage from the pharynx, which is bathed in the secretion from and shares in the reaction in the nose, is, in part, to the mediastinal groups. (6) The secretion which is moved posteriorly is probably swallowed and aspirated during sleep in considerable quantities. It is small wonder then that so many people with chronic nasal allergy or infection get bronchitis and asthma.

The diagnosis of nasal allergy is simple in most instances. The differential usually lies between infection and hay-fever, although it is believed that hay-fever or vasomotor rhinitis from menopause, worry, or abnormal responses to thermal influences do occur. Occasionally, too, infection and hypersensitiveness occur together. But, by and large, the allergic nose can be recognized by: The history of itching; watery discharge; machine gun sneezing, which is usually paroxysmal; the variation from complete freedom to complete obstruction in a short time; the alternation from one side to the other; the occurrence of associated paroxysmal conjunctival itching, redness, burning and lacrimation; the remarkable absence of febrile reaction; the history of one cold after another, and of wheezing when colds settle in the chest. It is surprising how often this history can be elicited. There is usually though not always a family or personal history of one or more of the other allergic diseases. The nasal secretion characteristically contains over 10 per cent of eosinophils. The nasal mucosa is pale and boggy rather than red and tense. Polyps are apt to be present in chronic cases. Skin tests are often positive.

In the management of a case, the pathological diagnosis having been made, an etiological diagnosis must be made. This is done: (1) by questioning carefully about the influences of inhalants, foods, and thermal changes upon the symptoms. The attempt is also made to elicit all potential nonspecific factors such as constipation, dead teeth, other focal infections, emotional strain, and fatigue; (2) by skin tests; (3) by food and inhalant eliminations; (4) by thermal tests.

Thermal hypersensitiveness is recognized (1) by the history of the aggravation of symptoms when the weather is changeable, very hot, very cold, damp, humid or dry; by hot or cold baths; by draughts or getting feet wet; by over exertion or relaxation; (2) by testing for the effect of thermal influences. In this clinic we test for respiratory thermal sensitiveness by exposing the chest and face to infra red heat, then to ice packs. If no reaction occurs, heat is applied while breathing hot air from a moist towel; then cold air from an ice pack; then cold is applied while breathing cold air then hot air. If an attack of hay-fever or asthma is produced; the opposite thermal influence is applied immediately, usually with prompt subsidence of symptoms. This is a slight modification of technique (for the sake of simplicity) advocated and developed by Duke. (3) Fluctuating basal metabolic rate. (4) Low grade fever or unstable temperature or subnormal temperature.

To be rational, any treatment depends, of course, upon the diagnosis. The thing that makes all allergy so fascinating is that in no field of medicine is the detection of etiological differences between consecutive cases so important to their successful management. Without an etiological diagnosis the management of any allergic case is symptomatic, haphazard and, therefore, unsatisfactory.

Nasal allergy is no exception to this rule. Seasonal hay-fever, almost invariably pollen or occupational, is a problem for the allergist, who resorts to pollen injections, ephedrine, and conjunctival demulcents. It is clinically quite characteristic, easily recognized and on the whole easily controlled. Vasomotor rhinitis or perennial hay-fever, on the other hand, presents a problem which is much more complex and is, therefore, much less easily controlled. In the first place vasomotor rhinitis can occur theoretically from any condition which disturbs the delicate local balance between the vasospastic and vasodilator nerves of the nose. It has been stated that this balance can be upset reflexly by emotional disturbances, sex excitement, focal infections, disorders of the heat regulating mechanism, menopausal instability, and locally by irritation from infection or the allergic reaction. It would obviously be foolish to treat a patient locally with packs, shrinkage, antiseptics, etc., if the nasal symptoms were coming from an allergic nasal reaction to wheat. It would be equally foolish to expect relief from allergic

therapy if the personal and family allergic history and tests were negative, but the patient could date the onset to an acute purulent rhinitis which did not clear up and examination showed a badly deflected septum and pus could be obtained from the ethmoids by shrinkage and suction. Or, if this allergically negative patient were worried about her child who was in a tuberculous sanatorium, or was free from symptoms except with menopausal flushes, or had three abscessed teeth, or never had symptoms except over the kitchen stove, or in the first cold days in the fall, little could be expected from allergic therapy alone. At least one of each of these cases has been seen in this clinic.

A great many of these cases can be shown to be allergic and, on this account, a thorough and capable allergic study should be made of each patient. But, if they are not found to be allergic, other possibilities must be examined. At this point it is suitable to inject a criticism of a very prevalent misconception of what constitutes an allergic study. It is commonly believed by misinformed physicians that a particular syndrome cannot be allergic because skin tests are negative. In the first year of our Allergy Clinic, five of twenty-one patients with hayfever, and seven of thirty-three with asthma who were greatly benefited, were skin negative. The skin test is an invaluable but not the only diagnostic aid. It must be repeatedly done and carefully interpreted before it can be called negative. To be significant, all positive skin reactions must be verified clinically. It is the custom in the Allergy Clinic to spend from 40 to 120 minutes taking what we call an allergic history. We feel that this is time well spent. We learn more from it than we do from skin tests in many cases. An allergic history, to be valuable, requires patience and practice. To resume, if the patient is shown to be sensitive clinically, not just dermally, to an external substance, avoidance of it usually results in relief. If sensitive to an internal substance like bacteria, vaccines or removal of foci will often be effective. If the external substance cannot be avoided, injections of extracts of it, especially if it is an inhalant, will often help.

We have been surprised to find the number of cases in which the symptoms can be temporarily relieved or aggravated by exposure to temperature extremes by means of infra red heat and ice packs. An analysis of our experience with so-called physical allergy will be reported later. Duke has been the pioneer in this field which we think is the most important advance in the field of allergy since the development of the skin test and the principle of parenteral desensitization. Quite often foreign protein shocks help these patients for varying periods, especially if they can be shown to have subnormal temperature curves.

In spite of the best efforts of those best trained to treat perennial hay-fever, an appreciable number of patients continue to have symptoms. In a large number the results from allergic therapy are brilliant. This is true of all of the so-called allergic diseases. It is quite possible that the number of unsuccessful cases will be progressively reduced by improved methods of applying existing allergic practices or, more probably, by the elaboration of new working hypotheses which will be as novel when formulated as Duke's conception of physical allergy now is.

So far we have considered only the uncomplicated seasonal and perennial hay-fever or vasomotor rhinitis. If vasomotor rhinitis persists constantly enough and long enough local complications will arise. By and large, polypoid and myxomatoid degeneration of the mucosa of the nose and sinuses, or infection are the most important. Polyps should be removed and pus should be evacuated. A badly deflected septum or obstructing spur should be removed. I see no contraindications to this. What to do for the victim of large boggy middle tubinates who can rarely breath through either nostril is a controversial problem. Some cases, unquestionably, require a surgical relief from obstruction of the ostia, others from pressure on the asthmagenic area. The questions to be answered in each case before undertaking destructive surgery are: (1) Has every conservative thing been done to relieve this trouble? (2) If so, will the operation allow the respiratory and heat regulating mechanisms to function better or worse than now? (3) Is the condition now sufficiently serious to justify a destructive procedure, remembering always: that vasomotor rhinitis is sometimes a self-limited condition; that repeated conservative procedures are apt to be preferable as long as they produce temporary relief; that destructive surgery *per se* seldom cures, and is at best palliative

and preventive of local and distant complications. The palliative efficacy of such conservative remedies as ephedrine plus a sedative by mouth, ephedrine locally, anesthetizing the sphenopalatine ganglion, cauterization, foreign protein shocks, calcium, tonics, thermal treatment, sinus drainage, removal of polyps, as well as the indications for radical surgery, must be evaluated for each patient. This is best done by collaboration between the Allergist and the Rhinologist.

CHRONIC NON-TUBERCULOUS PULMONARY INFECTIONS.*

CHARLES L. SAVAGE, M. D.,
Richmond, Va.
Tuberculosis Clinician, State Health Department

An attempt to cover in even a cursory fashion all the non-tuberculous diseases of the lungs would make this presentation entirely too voluminous. Such conditions as pneumoconiosis, lung tumors, and the changes incident to the presence of foreign bodies, are of sufficient importance to justify individual consideration at some future time.

As we all know, pulmonary tuberculosis is the most common chronic pulmonary infection, and, therefore, must be considered in the differential diagnosis of all chronic lesions involving the lungs.

The Committee of the National Tuberculosis Association on Diagnostic Standards[1] has set forth certain factors for the diagnosis of tuberculosis; a proper application of these factors to all pulmonary lesions will lead to a correct diagnosis in a large percentage of these cases. These factors are as follows:

1. History.
2. Symptoms.
3. Physical signs.
4. X-ray evidence.
5. Tuberculin test.
6. Laboratory tests—sputum examination—blood Wassermann, etc.
7. Exclusion of other causes.

These factors need no further comment on my part; they are familiar to all of you, their relative importance in the various lesions will be pointed out at the appropriate time.

However, the tuberculin test may be disposed of here. It is of great importance in the differentiation of lesions in children, and is used principally for this purpose. Our present knowledge of this subject may be summed up with the statement that —a positive tuberculin indicates a tuberculous infection in that individual, and from this standpoint has a definite value when used with other findings. No single factor is conclusive, and in most instances it is necessary to take them all into consideration before arriving at a correct diagnosis.

First consideration will be given to a brief outlining of the more advanced lesions, namely, chronic lung abscesses and chronic bronchiectasis.

CHRONIC LUNG ABSCESS

The most important *etiological* factors are tonsillectomy, operations upon the accessory nasal sinuses, and dental extractions. The first seems to be a most common cause according to figures given by Gordon,[2] who reviewed the literature in 1931. There are a small percentage of cases that follow surgery elsewhere in the body, although the wounds may be clean ones. An apparently increasing number of cases is being observed following influenza pneumonia, broncho-pneumonia, lobar pneumonia and broncho-pneumonia due to Friedlander's bacillus.

More attention is being paid to pyorrhea alveolaris as a possible source of infection, attention having been focused upon this subject by Crowe and Scarff[3]. Foreign bodies may cause obstruction of a small bronchus or bronchiole, with resultant abscess formation. There are many other etiological factors, but those already mentioned seem to be the most important ones.

Pathology: This is essentially irregular areas of consolidation with central necrosis and a tendency to irregular infiltration of the surrounding tissues.

A search of the literature brings out some rather interesting facts concerning the location of lesions.

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The highest incidence is in the lower lobes. However, Whitmore,[4] Flick,[5] and others have reported series of cases in which the majority of the lesions were said to be in the upper lobes. It is interesting to note that Emerson[6] believes that lung abscess has been diagnosed pulmonary tuberculosis often in the past because of its location in the upper lobe. These facts add further difficulties to the diagnostic problem, as was illustrated by cases reported by Stafford[7] in which tuberculosis in the upper lobes was diagnosed lung abscess. It is our experience at Blue Ridge Sanatorium that the majority of the lesions are located in the lower lobes and on the right side. However, in view of the fact that the upper lobe on the left in front reaches to the base, and on the right in front extends to the fourth rib, it can readily be seen how many abscesses may be found in these regions.

Symptoms: There is a wide variation between the probable time of infection and the onset of symptoms, which may be from five days to months. Pain in the chest, dry cough and a low grade fever are the most common early complaints. With progression of the lesion the symptoms increase and there is frequently a history of a severe coughing paroxysm with a sharp pain in the chest and a feeling as if something has broken loose; this is followed by the expectoration of a large quantity of pus and some fleshy material. After rupture of the abscess, the course is usually more progressive, with loss of weight, anemia, fever, expectoration of large quantities of pus, and there may be "frank" hemoptysis or blood streaked sputum. In some instances the abscess ruptures into the pleural cavity, and then we have the complicating signs and symptoms of an empyema.

Physical Signs may be diagnostic or of very little value, depending upon the site of the lesion. When peripherially located, there are likely to be signs of consolidation with or without cavity formation; when centrally placed, there may be only a suppression of the breath sounds with or without musical rales.

Stereoscopic X-Ray Films are of great help in localizing the lesion and in deciding what course to follow in the treatment. The picture produced is fairly typical, showing a somewhat circumscribed consolidation usually irregular in outline, with or without cavity formation, and most frequently located in the lower half of the lungs. It is to be noted that not infrequently there is more than one lesion.

Diagnosis of lung abscess calls for a consideration of all of the previously mentioned diagnostic factors. The history is invaluable, especially in the cases of considerable duration. The physical signs, as pointed out, may or may not be of value. The X-ray gives us great assistance here, but is not infallible. Sputum examinations and cultures are of utmost importance in that they help to eliminate the presence of tuberculosis as well as being of value in determining the nature of the infection present.

Treatment: Since it is not my purpose to discuss this phase of the subject, I wish merely to point out that Spector,[8] Alexander and Buckingham,[9] and others[10] emphasize the fact that proper medical care instituted early is frequently superior to surgical intervention. However, surgical treatment, if necessary, should not be delayed.

BRONCHIECTASIS

Allen Krause[11] has said, "The curability and amelioration of tuberculosis at advanced stages are vastly ahead of those of bronchiectasis in its earlier phases." Surely the latter disease is certainly more offensive. Undoubtedly bronchiectasis in its earliest stages is far more prevalent than is realized, and the above statement, with which I agree in its entirety, should spur us on to greater interest in this subject and thereby earlier diagnosis.

Etiology: Bronchiectasis is essentially a secondary condition, with many predisposing and exciting factors. Influenza, pneumonia, measles, scarlet fever and whooping cough may be the exciting cause of pulmonary changes which eventually become a true bronchiectasis. Accessory nasal sinus disease, chronic tonsillitis, pyorrhea alveolaris, and repeated upper respiratory infections may produce a chronic bronchitis which is a common forerunner of bronchiectasis. Unrecognized foreign bodies are responsible in many cases for the development of lesions. There are numerous other etiological factors, but the above are apparently the most common.

Pathology: Degenerative changes in the mucosa, elastic and muscle tissue of the bronchi, resulting in saccular, fusiform or cylindrical dilatations, are the most outstanding features. These are, of course, accompanied by changes in the lung parenchyma, varying from diffuse fibrosis to literally multiple

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communicating abscesses of the saccular variety. Scattered small areas of pneumonitis are not uncommon. These lesions are predominantly located in the lower lobes, but have been described in the upper ones; when located in the latter position, it is usually coexistent with tuberculosis.

Symptoms in "frank" cases are often diagnostic. Paroxysmal coughing with expectoration of large quantities of characteristic sputum, which, when placed in a conical glass separates into three layers —a top frothy layer, a middle layer which is a thin, turbid, greenish fluid, and at the bottom a layer consisting of pus, cellular debris, bacteria, fatty accids and hematoiden crystals.

Hemoptysis is not an uncommon accompaniment of bronchiectasis, and occasionally may be in alarming quantities. In the more advanced cases the patient is usually anemic, and in addition to his cough and expectoration, which is usually worse in the morning, he complains of loss of weight, strength and appetitie. Dyspnea on exertion and pleurisy pains are frequently encountered.

Physical Signs: As in lung abscess, the physical signs vary with the pathology and are often misleading as to the extent of the disease. In the early cases, the signs may be those of a chronic bronchitis; in the more advanced cases, signs of consolidation, with or without cavity formation, may be present, depending upon whether the bronchi have recently been emptied. Bubbling rales are present in many instances, and musical rales are found in nearly all cases. Clubbing of the ends of the fingers is often noted, and is practically always present in the advanced cases.

X-Ray Examination may show ringlets along the basal trunks with or without multiple small areas of consolidation. There may appear to be, in the more advanced cases, multiple abscess cavities. In the very early cases iodized oil injections and stereoscopic films are usually necessary before a definite diagnosis can be made.

Diagnosis: With cases presenting the advanced stage, a carefully taken history will lead to a correct diagnosis. Physical signs, X-ray pictures, and sputum examinations help to confirm the diagnosis.

However, it does not appear to me that a diagnosis of bronchiectasis at this textbook picture stage of the game is of any particular credit to the physician and the patient has passed a stage at which he could best be benefited with proper treatment. Indeed, if the patients but knew the technical terms they could diagnose their own cases.

Treatment: Postural drainage, general hygienic measures, such as diet, rest, etc., combined with bronchoscopic drainage, and surgery in properly selected cases, briefly summarizes this phase of the subject. Prophylactic treatment is by far the most efficacious and the most satisfying both to the patient and his physician.

Having reviewed what is often the end-result of unrecognized early pulmonary lesions, I wish next to call your attention to a number of conditions which may be grouped under chronic bronchitis and suppurative pneumonitis. Indeed, as Young[12] has said, whether you term them chronic bronchitis, recurrent bronchitis, unresolved pneumonia, recurrent interstitial pneumonia, or fibrosis of the lungs with or without bronchiectasis, they are all different stages and varieties of the same disease.

CHRONIC BRONCHITIS

This is rarely a primary disease. When primary, it is usually due to the inhalation of some irritating substance incident to the occupation of the individual. Such a bronchitis may progress to a definite bronchiectasis if proper corrective measures are not instituted early.

In the past few years the literature has been filled with pleas for greater recognition of the fact that diagnoses of chronic bronchitis should suggest some underlying pathology. Meekins,[13] Krause,[11] Cooper,[14] and many others have clearly demonstrated that what is from the physical examination a mild bronchitis may be a rather extensive pneumonitis or bronchiectasis.

Etiology: The most common etiological agents are infections of the accessory nasal sinuses. Manges,[15] Dunham,[16] and many others[17, 18] have given excellent descriptions of the pulmonary changes which either accompany or are the result of sinus disease. The sinus infection may be a "silent" one in that there are no symptoms referable to it, or there may be persistent drainage from a long standing infection. It is to be noted that chronic infections in the sinuses may be the result of intranasal obstruction due to spurs, malformed turbinates or deviated septa, and there does not necessarily have to be an empyema of one of the sinus cavities.

There are several accepted routes of infection to the lungs. Aspiration of infectious material seems to be the most prominent. Quinn and Meyer[19] and McLaurin[20] have experimentally established in human subjects that material may be aspirated from the upper respiratory tract. Others[15, 17] have expressed themselves as believing this to be the usual route of infection.

Krause[11] and Young[12] have reported cases in which they believe the pulmonary infection to be the result of direct extension from the upper respiratory tract, thus starting a focus of infection in the lungs which may or may not manifest itself as a pneumonia at this time. The upper respiratory infections that accompany the infectious diseases of childhood, especially measles and repeated attacks of sinusitis, seem to be the chief offenders. Jackson[21] and McPhedrin[22] have expressed themselves as believing this to be a frequent route of infection.

Whooping cough is a common cause of chronic pulmonary lesions which usually begin with bronchitis. Apparently ruptured alveoli and dilated bronchi plus a superimposed infection are the principal factors here.

Undoubtedly in many of the infectious diseases and repeated coryzas an unrecognized accessory nasal sinus infection plays an important role.

Still a third route of infection, the lymphatic system, is advocated by some workers. However, a search of the literature does not reveal any satisfactory proof of any connection between the lymphatics of the upper respiratory tract and oral cavity and those of the lungs. Recent evidence[23] seems to confirm existing belief that the lymphatics of the former areas drain into the subclavian veins at the root of the neck. Mullen[24] believes that material enters the circulation here (the subclavian veins) and is deposited in the lungs, and thus sets up an infectious process. To me, this does not seem to be a logical conclusion, in view of the predominance of the lesions in the lower halves of the lungs and not a generalized distribution, as would be expected.

What has been said concerning the accessory nasal sinuses, etc., also applies to chronically diseased tonsils and pyorrhea alveolaris. Although many doubt that these infections play any part as a source of infection, I am convinced from observation that they do, and I became more firm in my convictions when I learned that such men as Jackson,[21] Alexander and associates,[9] and others,[14] feel that the tonsils and infections about the teeth are important factors in the production of chronic pulmonary infections.

Influenza is a fairly common cause of chronic pulmonary disease, and will be discussed in detail later.

It is interesting to note that neither Cecil's nor Osler's textbooks on Practice of Medicine specifically mention oral sepsis, nasal sinusitis, or the infectious diseases of childhood as etiological factors of chronic bronchitis. They deal principally with those conditions that are the result of senile changes and those secondary to such conditions as cardiac and renal disease.

Patholoy: The patholigical changes are noted principally in the lower lobes, and the lesions are bilateral in the majority of cases.

It is interesting to note with reference to pulmonary basal lesions that, up to the present time, according to Gordon,[25] not one negro has been bronchoscoped at the Jefferson Hospital in eight years for such a lesion. All cases have proven to be tuberculosis, although in many instances the X-ray picture resembled the non-tuberculous lesions seen in the white race.

The earliest structural changes noted are glandular enlargement and fibrous tissue deposits in the root regions. Between the above mentioned changes and the changes of an advanced bronchiectasis many types of lesions may be found; a diffuse fibrosis, peribronchial infiltration, which may be limited to the bases or generalized, and areas of pneumonitis, are some of the common findings.

Symptoms: The most outstanding feature of the symptoms of chronic bronchitis is the disproportion between them and the extent of pathology. The patient is usually fairly well nourished, and in what he considers a good state of health except for his present complaint.

In the very early cases a non-productive cough, due to glandular enlargement or slight bronchial irritation, is the only complaint. Unfortunately, due to the sparsity of symptoms, few cases are seen at this time.

With progression of the lesion the cough becomes more productive and more disturbing. At first this is likely to be seasonal, but later it becomes perennial. Unfortunately, many of these cases are passed

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up as a mere bronchitis, without further investigation, and, as result, other symptoms, such as loss of weight and vitality, anemia, low grade fever develop and proceed on to a typical textbook picture of bronchiectasis.

Luckily for some of these patients, hemoptysis or blood streaked sputum appears, and a diagnosis of tuberculosis is frequently made. Often it remains for a consultant to correct the diagnosis, locate the cause, if possible, and institute proper therapy.

Many of these patients go for months, or even years, under the diagnosis of a bronchitis, or are undiagnosed until pneumonia becomes superimposed upon the existing lesion. A failure of the symptoms to completely subside, or the persistence of physical signs directs attention to the basal lesion. In consequence, the lesion is attributed to a failure of the pneumonia to completely resolve; whereas the pneumonia has merely served to focus attention upon something that has been existing and undoubtedly progressing for some time. Often, especially in children, the exact status is not recognized at this time, due to the absence of physical signs, and these children are labeled as being frail and undernourished. There may even be several attacks of pneumonia or recurrent acute coryzas before the condition is properly recognized. It is interesting to note that often in the early cases between acute exacerbations, symptoms referable to the chest are conspicuous by their absence. Due to the onset of a low grade fever and the persistence of malnutrition and other evidences of frailness, an incorrect diagnosis of tuberculosis may be made. Again, a failure to recognize the exact state of affairs may result in the development of an advanced bronchiectasis.

Physical Signs: As has been pointed out before, these are frequently conspicuous by their paucity, and are not infrequently misleading as to the extent of the pathology. When present, the most outsanding features are a prolongation of the breath sounds, an impairment of voice conduction, and varying quantities of musical rales. In the more advanced cases mucous rales may be noted. A pleural rub is not an uncommon finding.

X-Ray Findings: As Willis[26] and Austrian[27] have pointed out, in the very early cases nothing abnormal is seen on the roentgenogram. Manges[28] has given a very concise description of the various findings, which are as follows: (1) Thickening at the roots of the lungs by glandular and other lymphatic enlargement; (2) General peribronchial thickening; (3) Tissue changes in the dependent portions of the lungs and pleura. The tissue changes manifest themselves by a thickening of the basal trunks, with or without varying degrees of pneumonitis. While these changes are principally described as resulting in case with accessory nasal sinus disease, I believe they are equally descriptive of the lesions from the other etiological factors mentioned.

Diagnosis: I am sure you will all agree with me that all of our diagnostic factors should be applied to these cases. The history is a valuable aid and gives suggestive evidence of what to expect. The physical signs may or may not reveal anything, but are usually at least suggestive of some pulmonary pathology. Stereoroentgenograms may present one of the pictures described, or, as pointed out in the very early cases, nothing of significance. A repeatedly negative tuberculin test is of considerable value, especially in children, and of some help in adults. Multiple sputum examinations are of utmost importance in that they help to elminate tuberculosis, and, as in bronchiectasis, are often of value in directing the treatment.

A consideration of all of the factors is essential, especially the history, if we are to arrive at a proper conclusion. I cannot lay too much emphasis upon the necessity of recognizing these lesions in the early cases and their differentiation from tuberculosis.

In reality, these cases are potential bronchiectasis, and in many instances are really an early bronchiectasis; although they do not possess the typical textbook picture with a characteristic sputum and extensive physical signs. A recognition of these facts will lead to an earlier diagnosis at a time when the best results can be secured from proper treatment.

Treatment: The institution of therapeutic measures employed in the treatment of tuberculosis, namely, rest, adequate diet and proper hygienic measures, are of considerable value. The elimination of foci of infection in the mouth and upper respiratory tract, and the breaking of contact with individuals who have upper respiratory infections is of value. In the more advanced cases, postural and bronchoscopic drainage in properly selected cases gives good results.

INFLUENZA

This malady not infrequently leaves pulmonary changes which may eventually terminate in bronchiectasis or lung abscess. A low grade pneumonitis or a chronic bronchitis are not uncommon findings.

Friedman[29] pointed out, in 1918, that the bronchopneumonia complicating influenza presents an X-ray picture not unlike those of early pulmonary tuberculosis, and that a diagnosis of tuberculosis in individuals who have had influenza or influenzal pneumonia, should be made with great hesitancy even months after apparent recovery, and then only with as positive evidence as can be obtained, and this is equally true now.

Symptoms and Signs are essentially those described under chronic bronchitis with an antecedent history of influenza.

Roentgen Ray Findings are likewise similar to those given for bronchitis, and often have the appearance of an exudative tuberculosis lesion. In those cases in which an abscess develops, the lesion is usually located close to the hilum;[30] otherwise, the picture presented does not differ from that described under chronic lung abscess.

Diagnosis: This requires the same study as previously outlined. Once more, too much cannot be said against passing these cases by as a mere bronchitis or residuals of influenza that are expected and will soon clear up.

Treatment: This is the same as has been previously outlined.

CHRONIC LUNG CONDITIONS FOLLOWING FRIEDLANDER'S PNEUMONIA

Although a pneumonia due to Friedlander's bacillus is often fatal, a rather interesting series of cases has been reported by Collins and Karnblum.[30] These cases were followed in many instances through the acute stages to chronicity. It was noted that they passed through a rather definite cycle of broncho-pneumonia, pseudo-lobar pneumonia, multiple abscess formation and cavitation, and extensive fibrosis. It is in the last two stages that these cases are encountered as chronic pulmonary lesions. It is interesting to note that the authors observed that the pneumonic lesions resemble closely those seen in influenzal pneumonia. The cavities are thin walled and located peripherally, as distinguished from those near the hilum following influenza, with resultant abscess formation.

Symptoms do not differ from those of similar lesions. Hemoptysis was noted as a common complaint.

X-Ray Findings are not conclusive, but are often quite suggestive of the nature of the pathology.

Diagnosis rests upon a consideration of the history, X-ray picture, and the finding of large quantities of Friedlander's bacilli in the sputum.

Treatment: There are no specific measures for this particular infection; therefore, what has been said before suffices.

ASTHMA

These considerations would not be complete without mentioning asthma. Although this disease has come to be recognized as due in the majority of instances to a hypersensitiveness to substances other than bacteria, many cases are found that present pulmonary changes like those described under chronic bronchitis. Most of these cases show evidence of a chronic upper respiratory infection or oral sepsis. Chronic accessory nasal sinus disease has been the most frequent offender.[31, 32]

These facts should lead to an investigation of the above mentioned areas in all cases with asthma. Although they may not be primary offenders, such infection may be the cause of poor result with specific desensitization and elimination therapy.

BRONCHOMYCOSIS

In the past few years interest in fungi disease has been revived. Apparently such infections are not as rare as many of us had believed.

It is interesting to note that as late as 1925 Hiss and Zinsser's[33] Textbook of Bacteriology did not mention pulmonary infection with monilia. Osler's text, in 1928, gives a short paragraph to bronchomoniliasis, and Cecil's text, as late as 1928, does not even mention bronchomycosis or broncho-moniliasis.

Etiology: Various strains of monilia, actinomyces, streptothrix and blastomycoses may produce pulmonary changes. There are a few individual characteristics of the infections which sometimes aid in the clinical distinction; therefore, they will be considered individually.

MONILIA INFECTION

The mode of infection with this organism is thought to be by inhalation.

Pathology: Grossly, it is difficult to distinguish the changes from those produced by bacteria. There may be a widening of the root region with peribronchial thickening, interstitial fibrosis, varying degrees of consolidation, or an extensive bronchiectasis.

Microscopically, there may be pseudo tubercle formations, fibrosis, granulation tissue and necrosis. Any combination, or all of these changes, may be found.

Symptoms: There are clinically two very definite responses to this infection—a mild and a severe one. In the mild cases a cough with a mucopurulent sputum is usually the only complaint. This type may be cured spontaneously or progress into the severe form, which is indistinguishable clinically from advanced tuberculosis. Between the two extremes there are cases which resemble in all respects moderately advanced tuberculosis. Fever, cough with expectoration, which is frequently blood streaked, and emaciation, are prominent features of the moderate and severe forms. The course is usually rapidly progressive.

Physical Signs: Those of a chronic bronchitis, bronchiectasis, or extensive consolidation, with or without cavitation, may be present. However, an outstanding feature of these cases is that the pathology is frequently far more extensive than would be suspected from the physical findings.

X-Ray Findings: These are not diagnostic. The lesions may resemble chronic bronchitis, tuberculosis, bronchiectasis or lung abscess.

Diagnosis: Since the other diagnostic factors are not specific, this is for the most part a laboratory problem of isolating, culturing and proving the pathogenicity of the organism obtained from the sputum. Proof that the organism is virulent is very important because, as Castellani[34] has pointed out, monilia may be found in the sputum but be nonpathogenic. Utmost care is necessary in examining the sputum, as the organisms, although virulent, may be secondary invaders, especially in cases with tuberculosis.

ACTINOMYCOSIS

Although there is a small number of cases in which this infection is primary in the lungs, it is usually secondary to lesions about the neck and face. In the former case, infection is believed to be by inhalation; in the latter, by aspiration from the mouth.

The Pathology is inflammatory and suppurative in nature, with the production of varying amounts of granulation and connective tissue surrounding multiple areas of abscess formation.

The Roentgenogram is not diagnostic, and is not unlike that described for monilia; however, the lesions are predominantly basal in location.

Diagnosis: In the primary cases this depends upon eliminating other etiological agents and the finding of actinomyces in the sputum. This disease should be suspected in any case with an actinomycotic lesion with pulmonary symptoms.

A pitfall awaits us here, as elsewhere, in that Lord[35] has isolated actinomyces from normal teeth and the tonsillar crypts of patients without evidence of the disease; therefore, we must be sure the material expectorated is from the lungs.

STREPTOTHRIX

This fungus usually causes a primary infection in the lungs, and produces pathological findings not unlike those of actinomycosis. Likewise, the lesions are predominantly basal in location, but may be elsewhere.

Symptoms are essentially the same as those of monilia.

Prognosis is much worse here, as septicemia seems to be a frequent complication.

Diagnosis offers the same problem as do other fungi infections. However, great care must be exercised in examining and culturing the sputum as the mycelia are acid fast, and may be mistaken for tubercle bacilli, or *vice versa.*

BLASTOMYCOSIS

Pulmonary infections with this organism, like actinomycosis, are practically always secondary, the primary lesion usually being a cutaneous one.

The Pathology is like that of actinomycosis and streptotrichosis, but with a greater tendency to multiple small abscess formations.

The X-Ray Findings and Symptoms do not differ from those of actinomycosis, except the greater likelihood of finding many small abscesses.

The Diagnosis should be suspected in any person with a blastomycotic cutaneous lesion presenting pulmonary symptoms. The final decision, of course, depends upon finding the fungus in the sputum.

It can be seen from the above consideration that fungi infections of the lungs offer us another diagnostic problem in the consideration of chronic pulmonary disease, especially those diseases that predominantly involve the lower halves of the lungs. These diseases also serve to further emphasize the necessity for careful and repeated sputum examinations.

Treatment: This briefly consists of the use of iodides, X-ray therapy, and autogenous vaccines.

SYPHILIS OF THE LUNGS

This brings up the subject about which there seems to be considerable controversy; syphilologists and roentgenologists are on one side, and some pathologists and clinicians on the other. I shall merely attempt to present both sides of the question.

The clinicians and pathologists side is adequately summarized by Lawrason Brown[36] in the following statement, "There has never been any question about the occurrence of gummata of the lungs, though they are not a frequent occurrance. The same thing is true of white pneumonia of infants. But about other conditions attributed to syphilitic disease much doubt exists, especially in the mind of the pathologists. It should be recalled, however, that Warthin always maintains that syphilis produces in the lungs some degree of fibrosis, which, however, could not in most cases be directly connected with syphilis." He further states[37] that, "The therapeutic method of diagnosis is far from certain in pulmonary conditions in those with syphilis."

However, McLester[38] has said that while syphilis of the lungs is considered as a rare disease, evidences are accumulating that it is more frequent than is supposed.

Carter,[39] in 1920, believed that syphilis of the lungs, as evidenced by the therapeutic tests, was not rare.

Greer[40] has advanced the opinion that pathologists hesitate to make a diagnosis of syphilis of the lungs because of the similarity to tuberculosis, and, consequently, in the absence of treponema pallidium in the lesion, they prefer to make the more common diagnosis.

He has described three groups of lesions in the lungs which he believes result from syphilis. These are as follows: (1) Diffuse local induration, which appears as an interstitial process, observed particularly in the peri-bronchial and interlobar connective tissues which runs through the lungs from the hilus to the base in the form of strands. Lesions are most frequent in the right lung. Indurative lesions are usually associated with bronchiectatic areas. (2) Gummas are less frequent than the indurative type of syphilitic lesions in the lung, but, when found, are usually associated with the latter. The site of location is usually near the hilus or in the lower lobes. The size of this type of lesion is quite variable. (3) The so-called "white pneumonia" of infants.

Symptoms: An outstanding feature here is the disproportion between the symptoms and the pathology, the former being far less than would be expected from the physical signs. Otherwise, the manifestations are similar to those of chronic bronchitis or tuberculosis, and in some cases bronchiectasis.

It must be borne in mind that in the secondary stage of syphilis there may be a coexistent bronchitis. Lesions elsewhere about the body will usually lead to a correct diagnosis.

The Diagnosis of syphilis of the lungs, according to this group, depends upon the elimination of other causes, positive Wassermann tests, syphilis elsewhere in the body, and the response of the lesion to the therapeutic test.

SUMMARY

The most outstanding feature of all the nontuberculous pulmonary lesions is the fact that they are predominantly in the lower halves of the lungs. It has been noted that they may involve the upper parts of the lungs where tuberculosis predominates, and it must further be borne in mind that tuberculosis may occasionally be located in the base without any apical manifestations.

Chronic lung abscess and bronchiectasis have been reviewed for the purpose of emphasizing the importance of preventing, where possible, these pitiful maladies.

The diagnosis of chronic bronchitis without proper investigation is discouraged, for undoubtedly many early cases of bronchiectasis and potential lung abscess are being passed up as a mere bronchitis, and their best chances of recovery being lost.

The importance of infection in the upper respiratory tract, about the mouth, and the infectious diseases of childhood and influenza as etiological factors have been pointed out.

Some uncommon causes of chronic pulmonary

lesions, such as Friedlander's pneumonia, the bronchomyces and syphilis, have been reviewed and designated as of being of importance in cases with an obscure etiology.

It is hoped that this paper will serve to refresh our memories with the fact that all chronic pulmonary diseases are not tuberculosis, and, further, to stimulate our interest in properly classifying these lesions, and to the institutions of therapy earlier than has been the case too often in the past.

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THE SURGICAL RELIEF OF PAIN.*

J. G. LYERLY, M. D., F. A. C. S.,
Richmond, Va.
Assistant Professor of Neurological Surgery, Medical College of Virginia.

The first operation for the relief of pain was done for that of tic douloureux of the trigeminal nerve. Mears,[1] in 1884, suggested removal of the Gasserian ganglion for its cure. Soon after this several operations for the removal of the ganglion were described by men such as Horsley,[2] Sir William Rose,[3] Hutchinson,[4] Hartley[5] and Krause.[6] In 1900 Frazier,[7] at Spiller's request, did a physiologic extirpation of the ganglion by resecting the posterior root. This operation was done through the temporal route and it is the type most generally used today. There have been improvements in the technique contributed by Frazier[8] and Adson,[9] such as the preservation of some fibres to the ophthalmic division supplying the cornea with sensation and the saving of the motor root. The mortality at the present time is less than .5 per cent. In 1929 Dandy[10] advocated resection of the root through the posterior fossa which is now used in his clinic. Alcohol injection for trigeminal neuralgia was done by Schlösser[11] in 1903, and since then improvements in the technique have been made by Patrick,[12] Harris,[13] and Härtel.[14] The latter is not a curative procedure but it gives relief of pain for several months or a year.

The symptoms of tic douloureux are characteristic and the diagnosis is seldom difficult. It occurs most frequently in the middle aged and older people. It often attacks the second and third divisions and seldom the ophthalmic branch of the nerve. The pain is described as sharp shooting, stabbing, sprangling, and paroxysmal in character. The attack is set off by chewing, talking, washing, or shaving, any of which may be sufficient to cause a severe explosion of pain. This is different from other pains in the face, which are usually not intiated by such stimuli. The treatment of this condition is an alcohol injection of the peripheral branch involved or on intra-cranial resection of the posterior root of the ganglion. The former gives temporary relief while the latter is curative.

When the pain is due to involvement of the nerve by a growth, or to a true neuritis, there is frequently some degree of anesthesia in the face or cornea. The nerve may be affected in either the middle or posterior fossa of the skull. The treatment consists in the removal of the tumor. If this cannot be done, the posterior root should be resected to relieve the pain. The same treatment is necessary in malignant tumors of the naso-pharyngeal region where the peripheral branches of the nerve may be involved after their exits from the skull.

Carcinoma of the face, mouth and jaws is a frequent cause of intractable pain and suffering. While morphine and other narcotics may give a certain amount of relief, they soon become inadequate. There is always some suffering in the interval between the doses of the drug and after a while a tolerance will be established with little relief of the pain. The movement of the jaws and the passage of food over the ulcerated area may be very painful, so that the patient soon reaches the stage when he would rather starve than suffer the pain of eating. An alcohol injection of one of the peripheral branches of the nerve may give complete and continuous relief of pain. They may then eat an adequate meal in comfort, obtain sufficient amount of rest, and put on weight and strength to fight the disease. Everyone who treats carcinoma of the mouth and jaws knows the suffering the patient endures after the treatment and during the healing process. An alcohol injection before the treatment is begun may permit the operation to be performed without any further anesthesia and render the dressings and convalescence free of pain.

When the carcinoma involves the tonsillar region or the posterior part of the tongue, the pain will not be relieved by alcohol injection or operation on the fifth cranial nerve. In this case it will be necessary to resect the glosso-pharyngeal nerve which is best attacked inside the skull. It has been shown by Doyle,[15] Adson,[16] Dandy,[17] Fay[18] and Grant[19] that the pain in the pharyngeal region may be relieved by this operation. It is done through a unilateral cerebellar approach with very little risk. At the

*Read before the Richmond Academy of Medicine, January 23, 1934.

same time, should there be pain in the fifth cranial nerve distribution, the posterior root of the nerve may be cut in the posterior fossa. Sometimes there is invasion of the tissues of the floor of the mouth and neck with metastasis to the glands. In order to relieve this pain, Fay[18] suggests a rhizotomy of the upper three or four cervical posterior roots. This may be done at the time the glosso-pharyngeal nerve is cut by extending the incision downward and doing a hemi-laminectomy of the atlas and axis. Instead of the posterior root operation, as suggested by Grant,[19] it may be just as effective in relieving the pain and less hazardous to resect the cervical plexus in the neck as it comes across the posterior border of the sterno-mastoid muscle.

To relieve the pain in the extremities and body below the neck there is sometimes done a resection of a sufficient number of posterior roots to render the affected area anesthetic. There are several objections to this operation, namely: first, it destroys all forms of sensation which is especially undesirable in the upper extremities; second, it often requires a laminectomy of five or six vertebrae to cut six roots which may be necessary to make anesthetic an area involving three or four dermatomeres because of over-lapping of contiguous roots; third, it sometimes does not relieve the pain for the following possible reasons—a sufficient number of roots may not have been cut; there may be antidromic sensory fibres in the anterior roots, as suggested by Claude Bernard[20]; and Foerster[21] stated that afferent impulses may pass through the sympathetic nervous system along the ganglionic chain to enter the spinal cord at higher levels.

Sympathectomy has been used for the relief of pain since Jonnesco[22] first resected the cervical sympathetic chain in angina pectoris. Coffey and Brown[23] showed that the pain may be relieved by resection of the superior cervical ganglion and its branches. More recently Swetlow[24] and White[25] have attempted to block the afferent impulses from the cardiac and aortic areas by an alcohol injection of the rami communicantes. Since this procedure blocks the afferent fibres, it is considered more rational than operations on the cervical chain which carry only efferent fibres.

Adson and Rowntree[26] have shown that sympathectomy and sympathetic ganglionectomy in different vaso-spastic diseases and chronic arthritis will often improve the symptoms and relieve the pain. It is not known whether the relief of pain is due to interruption of pain fibres or to paralysis of the vaso-constrictors causing improvement in the circulation. The pathways of the pain fibres in the sympathetic nervous system are not clearly understood, and surgical measures done primarily to interrupt them for the relief of pain must be considered as empirical procedures.

All the pain fibres entering the spinal cord cross over to the antero-lateral column to ascend in the spino-thalamic tract to their destination in the thalamus. Its location was proved by Spiller[27] in 1905 when he had a patient with loss of pain and temperature sense in the legs, and at autopsy there was found a small tubercle limited to the antero-lateral tract in each side of the cord at slightly different levels. Based on this fact Martin,[28] at Spiller's request, in 1911, performed the first chordotomy on a patient for the relief of pain in malignancy of the lower spine. In 1912, Tietze,[29] at Foerster's request, did the operation independent of the Americans for the relief of pain of gastric crises. In 1920, Frazier[30] reported six cases on whom he had done chordotomies with relief of pain in five. He deserves the credit for clearly outlining the indications for the operation and for putting it on a sound basis. He stated that chordotomy should be done in the middle or upper dorsal region, and that it was only applicable for the relief of pain in the lower extremities and lower part of the body; that to do the operation in the cervical region may endanger the respirations by injuring some of the fibres to the phrenic nerve distribution. Since Frazier's report, neurological surgeons have performed the operation with success in relieving the intractable pains in the lower part of the body in the majority of cases. In 1932, Foerster[21] recommended unilateral chordotomy at the level of the second cervical segment in cases of painful conditions of the upper extremity. He did not advise a bilateral high cervical chordotomy because of the possibility of interference with respirations in case some of the motor fibres were injured. In one case, however, he did a bilateral cervical chordotomy, but the section was done on each side at separate operations. In 1933, after Foerster's report, Peet, Kahn, and Ailen[31] reported a case of bilateral chordotomy at the level of the second cervical segment on the

left and at the eighth cervical segment on the right. The operation was done on a patient for the relief of severe pain associated with chronic arthritis of the upper and lower extremities. The operation relieved the patient of the pain so that he was able to be up in a chair in a few days and take the exercises and baths necessary in the treatment.

At the present time chordotomy probably offers the best chance of relieving the patient of these intractable pains in the extremities and body below the neck. It can be done by the removal of the laminae of two or three vertebrae, preferably under local anesthesia, since sensory tests may be made after each incision in the cord to determine if sufficient pain fibres have been cut to give the desired analgesia. The dentate ligament divides each half of the cord into equal antero-posterior parts. It is used as an important landmark in making the incision, and it may be grasped with a pair of forceps for rotating the cord. The incision is made with a sharp pointed knife, starting just in front of the dentate ligament, to a depth of three to five millimeters, depending upon the region in which the chordotomy is done. The incision is carried forward to the anterior root, thereby severing the fibres carrying pain and temperature sense from the opposite side of the body.

If care is taken in making the incision anterior to the dentate ligament, there is little or no danger of injuring the pyramidal tract situated in the posterior lateral half of the cord. There is loss of pain and temperature sense on the opposite side in unilateral and on both sides of the body in bilateral chordotomy. There is preservation of the sensations of touch, position, and stereognosis, which is of special importance in certain parts of the body.

Finally, chordotomy is undoubtedly the operation of choice in relieving the intractable pains of malignancy and many other painful conditions in the body and extremities. For angina pectoris there may be done an alcohol injection of the rami communicantes from the second to the fifth dorsal intercostal spaces on the affected side. For the relief of pain in malignancy of the mouth and jaws and of tic douloureux an alcohol injection of a peripheral branch or an intra-cranial resection of the posterior root of the Gasserian ganglion may be done. An intracranial resection of the glosso-pharyngeal nerve may be necessary to relieve the pain in the throat associated with malignancy and the severe neuralgias. For the relief of the pain in the neck there may be done a rhizotomy of the upper three or four cervical posterior roots on the affected side, or preferably a resection of the cervical plexus in the neck at the posterior border of the sterno-mastoid muscle.

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300 Medical Arts Building.

SOME NATIONAL PROBLEMS OF TODAY THAT ARE OF SPECIAL INTEREST TO THE MEDICAL PROFESSION.*

J. A. NOBLIN, M. D.,
East Radford, Va.

In this new era in which we are now living it is interesting to note the close relation of the medical profession to many of the National problems of today. Never before in all history has the profession felt to as great extent the effects of the changing condition of the times. This fact brings to every physician the realization that "the old order changeth" and that in the future problems must be met and solved in a manner different to that of years gone by.

Let us review briefly some of the National health and economic issues of the day that are of vital interest and importance to our society and to the profession as a whole.

Due to continued social unrest and economic distress, the inevitable results of every depression, a subject of great moment still is and will be for sometime to come that of rehabilitation. It is conceded that conditions generally in the industrial world may be improved, if and when the National Recovery Act, Forest Conservation, and other governmental programs work out successfully, but, if the health, morale and financial condition of the people are to be completely restored, an intensive and adequate program of health education, mental hygiene and economic relief must be carried on.

*Presidential address before the Southwestern Virginia Medical Society at its semi-annual meeting in Wytheville, September 15, 1933.

Especially should we safeguard the health of our children, the citizens of tomorrow. The Children's Bureau of Labor recently reported that "one-fifth of all children in the United States are showing the effects of poor nutrition, inadequate housing and lack of medical care." This estimate is based on figures obtained in several large cities.

A government survey committee reported several months ago that two hundred thousand youths, most of them less than twenty years of age, are roaming the United States in search of a living. This condition is a direct challenge to those agencies which have the welfare of the youth of our land at heart. To be commended are interested citizens who are endeavoring with governmental help to establish concentration camps for these migratory youths, where, in addition to physical and moral training, they may receive a vocational training that will help them to become self-supporting citizens instead of a menace to society.

Of equal concern is the fact that an army of women and girls estimated at two hundred and fifty thousand are adrift in our country today. Before the depression most of these older women were self-supporting but, having reached the end of their resources, are obliged to appeal to charity, while the younger ones leave home because there is no room for them. This, of course, constitutes both health and social problems.

Little has been noted in the press recently in regard to the cost of medical care. This subject undoubtedly has had the thoughtful consideration of all our members, so that we as a component society of the State Society may act intelligently and concertedly on this subject should the need arise.

According to the American Medical Association, which has made a thorough study of the subject, there is an ever-increasing tendency on the part of certain agencies to promote new forms of medical practice, such as forming corporations, ostensibly for the health and welfare of the people but in reality for the monetary gain for the promoters themselves. It behooves any physician who is planning to affiliate with a medical corporation of any kind to first inform himself fully as to its policies.

The over production of doctors need hardly be mentioned. The concensus of opinion as to the remedy for this condition seems to be that colleges and universities accept only a limited number of students and only those best qualified to become leaders in their profession. Colleges can no longer handle the rapidly growing number of students seeking professional degrees. It is said that the medical schools of the United States and Canada are not prepared to admit more than seven thousand of the sixteen thousand candidates who desire to enter this autumn.

The same situation is found in the field of nursing. A year ago many of the states advocated the closing of nurse's training schools, the state of New York alone closing six hundred. A recent survey of fourteen hundred nursing schools in the United States was made by the National Grading Committee. It was stated that Virginia schools even during the period of severest depression have made many advances in the educational requirements of student and graduate nurses, but that practically all of our nursing schools have a long way to travel before they attain the goals set for them by the Grading Committee.

Statistics show that in spite of the depression there was a decrease in the death-rate in our country in 1932. On first thought, this is encouraging, but we should not be too sanguine, for experience here and in all countries effected by a depression has taught us that the bad after-effects are felt for years to come. Obviously there are many reasons why this should be so, such as malnutrition, postponed medical, surgical and dental care and others too numerous to mention here.

And, now, what of the economic status of the profession? The problems confronting the doctors have been summed up in an interesting and enlightening article by Dr. B. T. Beasley, of Atlanta, Ga., in the *Journal of the American Medical Association,* and are given here verbatum:

First. There is a decreasing demand for paid medical service.

Second. Preventive measures, increasing charity service and competitive practice of medicine by municipalities, states, the Federal government and corporations have reduced paid service by at least 50 per cent.

Third. There is an over-production of medical men.

Fourth. There is a great increase in efficiency and capacity of each individual doctor to render service;—one well-trained doctor should do the

work of two poorly trained ones, and with modern facilities he can do the work of many under the older order of things.

Fifth. The present financial crisis has stimulated the medical man to take stock of his status and analyze the situation in commercial terms and apply the same laws that control supply and demand or production and consumption to his case, thus arriving at the conclusion that the only hope for the medical man is to make the production of doctors in the future conform to the law of supply and demand. This is the only way to control state medicine. This is the only way to compromise with charity service. This is the only way to solve the problem of the high cost of medical care. This is the only way to keep medical men out of the bread line in the future.

These, in brief, are a few of the problems that confront the medical profession today. May we individually and fraternally strive to "carry on," as our profession has done from time immemorial, ministering to the people whom it is our duty, privilege and pleasure to serve.

THE INFECTED DIABETIC.*

JOHN HUNDLEY, JR., M. D.,
Lynchburg, Va.

The patient with diabetes mellitus is particularly prone to the development of infection. This is due to the lowered resistance of the diabetic tissues, and, in the older diabetic, to the vascular sclerosis present, which is, on the average, ten years more advanced than in the non-diabetic. This lowered resistance is especially noted in those diabetics who are untreated or improperly treated.

All infections in the diabetic, whether acute or chronic, have a harmful effect on the carbohydrate metabolism, and secondarily on the related fat and protein metabolism. There results from the infection a reduced tolerance for carbohydrates, a lessened response of the organism to insulin, a tendency to acidosis, and definite disturbances in water metabolism. Acute infectious processes cause the most marked changes, but chronic infections also alter the metabolic response, though in a less marked degree, and seldom produce an acute emergency.

The influence of chronic, or low grade, infections on the diabetic state is so definite that a large volume of literature has accumulated, giving such factors paramount etiological importance. Several writers, notably European, have contended that syphilis is the cause of most, if not all, diabetes. Tuberculosis has been often blamed, and an article recently read gave the impression that most diabetes was due to infection with the staphylococcus, even though the infection was often of such low grade as to cause no leukocytic or febrile response. Acute or chronic gall-bladder infections so frequently accompany diabetes that they are given etiological importance in the minds of some writers. While possibly an infectious origin of diabetes has not been absolutely disproven, and certain cases manifesting diabetes mellitus do recover, or markedly improve their ability to assimilate carbohydrates on recovery from infection, yet, in the light of present-day knowledge, the syndrome of diabetes could hardly be blamed on infection alone. Undoubtedly, however, it is true that there is a very marked improvement in the diabetic state following removal or adequate treatment of chronic infectious processes.

With acute infections in the diabetic there is a marked exaggeration of the metabolic disturbances, and acute infections of whatever origin in the diabetic patient constitute definite emergencies which are both medical and surgical. The treatment is not isolated and separate. Along with metabolic and dietary regulation must proceed the necessary surgical procedures to rid the patient of his toxic focus.

Acute infection in the diabetic patient markedly lowers the sugar tolerance by decreasing the ability of the tissues to utilize sugar, lowering the glycogen content of the liver and possibly the muscles, altering the acid-base mechanism, and interfering with the water metabolism of the body. All of these are features characterizing the diabetic state, and they

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are exaggerated by the presence of infection. In most cases adequate insulin, which may mean several hundred units in the twenty-four-hour period, abundance of readily assimilated carbohydrates, and forcing of fluids, occasionally with alkalies, will clear up the urinary sugar, reduce the blood sugar, and prevent or clear up any acidosis present. But the condition will not remain in balance as long as the acute infectious process is present. Where palliative treatment is the only type available, continuation of such measures, with maintenance of the best metabolic balance possible, is the procedure to be followed. However, in infected gangrene, cellulitis, acute appendicitis, and such like surgical disorders affecting the diabetic patient, the prompt removal, or adequate drainage, of the infected focus results usually in a rapid return to the previous mild and easily maintained metabolic balance.

However, mere statement of the fact is far from solving the problem.

The diabetic may have known of his condition and been in relative balance, properly dieted, or on a balanced diet controlled with insulin, or the first intimation of diabetes may be the finding of sugar in the routine urinalysis. In either case there is presented an individual with a serious disturbance in carbohydrate metabolism, having or threatened with an acidosis, who has been further thrown out of balance by the infection present, and who faces an operation requiring an anesthetic. What is to be the procedure? Surgery is required, but, without the proper pre-operative preparation and post-operative care, surgery will be fatal in a large percentage of the cases. What are the essentials in the preparation? First, abundant carbohydrate supply for tissue utilization, to combat acidosis, to combat shock, and to prevent liver damage. Second, sufficient insulin to reduce the hyperglycemia to around normal levels, to balance the carbohydrates administered, to provide liver storage of glycogen, and to speed the tissue utilization of glucose. Third, fluids to combat the dehydration and to correct the disturbed water balance. And, fourth, alkalies, if the acidosis is not sufficiently controlled by the preceding, and to guard against the acidosis resulting from the anesthetic. This preparation, properly controlled by frequent laboratory examinations, may often be completed in a few hours, or, if the time element is of less importance, in a day or two.

The choice of an anesthetic next demands attention. The tissues of a diabetic, particularly the older diabetic, are handicapped by limited blood supply, so local anesthetics must be used with caution. Inhalation anesthesia, especially ether and chloroform, produces a rise in the pH of the blood with a resulting acidosis which lasts often for as long as twelve hours post-operatively. Acidosis causes a lessened response of the organism to insulin, with resulting inability of the tissues to remove the circulating sugar from the blood, and a consequent rise in blood sugar. Excitement, struggling, and muscular effort cause increased epinephrine secretion which releases sugar stored in the liver and so results in a temporary hyperglycemia. Asphyxia increases blood sugar, probably through the production of an acidosis. Nitrous oxide and ethylene cause no acidosis unless asphyxia results. There are no especial contraindications, from the diabetic state alone, to spinal anesthesia, so spinal is the anesthesia of choice, followed in order of desirability, by local infiltration, local with nitrous oxide, ethylene, and very rarely ether.

Post-operatively, abundant carbohydrates, adequate insulin, and plenty of fluids are required. Fluids should be pushed by all available measures, and carbohydrates by mouth, by rectum, and intravenously. Oral feedings should be resumed as soon as the condition of the patient will permit, with the rapid resumption of a properly controlled, metabolically balanced diet, controlled by insulin. The carbohydrate tolerance will increase, and the insulin requirements decrease, once the infectious process is removed or adequately drained.

This procedure cannot be carried out by the internist, or by the surgeon, nor can it be satisfactorily carried out by both working independently. Close cooperation is required. As Eliason says, "In the past the surgeon has erred as far as metabolic treatment is concerned. Now that diabetes reaches the medical man first, he must not err, as has the surgeon previously, to seek early consultative advice. Whereas teamwork always works for the best, here is it imperative. Procrastination, or independence, on the part of either the surgeon or the metabolist works for only one end-result—increased mortality."

808 Allied Arts Bldg.

XUM

THE TREATMENT OF INFECTIONS OF THE CENTRAL NERVOUS SYSTEM BY FORCED SPINAL DRAINAGE.*

R. FINLEY GAYLE, JR., M. D.,
Richmond, Va.
Associate Professor of Nervous and Mental Diseases, Medical College of Virginia

We believe that we are justified in using any type of treatment of the infections of the central nervous system which presents the possibility of lessening the immediate mortality and the permanent disability which so often follows the acute and chronic infections of the central nervous system.

In the past five years considerable thought and experimental work have been given to the treatment of infections of the central nervous system by a method known as forced spinal drainage. The principle of this procedure consists in the forcing of fluid through the choroid plexus and the perivascular and perineural spaces of the central nervous system into the ventricles and subarachnoid space. This spinal fluid is drained through a lumbar puncture needle which is left in place for hours, days or even weeks. The passage of fluid through these spaces is increased by the use of a hypotonic salt solution given intravenously. The details of the method will be described later in this paper. The idea in view is to flush or wash out the toxins, exudates and other products of inflammation in the substance of the brain and spinal cord.

The belief that inflammatory products should be purged from the perivascular and perineural spaces of the central nervous system by this method has suggested the idea that such treatment might favorably influence the course of certain infections of the central nervous system.

By the process of osmosis, water and certain salts under normal conditions pass through the blood vessel walls into the interstitial spaces and from these interstitial spaces back into the capillaries. When there is a greater concentration of salt in the blood vessels the flow of fluid is from the interstitial spaces into the blood vessels; when the salt concentration is less in the blood stream the flow is from the capillaries into the fluid spaces surrounding the capillaries. Osmotic pressure is known as the force causing this interchange from the blood vessel into the surrounding tissues, and *vice versa*. It depends, of course, on the concentration of the salts in the solution. Normal osmotic pressure of the blood is that of an aqueous solution of 0.9 per cent of sodium chloride. A solution of greater concentration than normal is called a hypertonic solution; a solution of less than 0.9 per cent is called a hypotonic solution. It is a well accepted fact that the permeability of the blood vessel walls may vary in different organs of the body and also in the same organ under different pathological conditions. The permeability of the capaillary wall is believed to be increased where there is a surrounding area of acute inflammation of the tissue.

When a saline solution of less than 0.9 per cent —a hypotonic solution—is injected into the blood stream, osmotic pressure causes a flow of fluid through the blood vessel wall into the surrounding tissue and intercellular spaces. The fluid flows through the intercellular and perivascular spaces into the subarachnoid space and ventricles of the brain, and from the subarachnoid space the fluid is drained away from the body by means of a lumbar puncture needle. When the subarachnoid space is not continuously drained, it has been shown that there is some hydration of tissues in the central nervous system as a result of intravenous injections of hypotonic solution. If, however, the subarachnoid space is sufficiently drained, no hydration takes place, and there is, therefore, by this method, a flushing of the lymph spaces of the central nervous system.

We therefore conclude that, when a hypotonic salt soultion is slowly injected into the blood stream, osmotic pressure in the capillaries causes the fluid to flow from the blood stream into the perivascular spaces. If the fluid is continuously drained from the subarachnoid space, there is no opportunity for osmotic equilibrium to be established. The flushing by fluid from the capillaries of the depths of the inflamed area of the brain or cord can be continued as long as it seems desirable. There is evi-

*Read at the sixty-fourth annual session of the Medical Society of Virginia in Lynchburg, October 24-26, 1933.

dence, too, that the flow of fluid is greater in the inflamed areas, possibly in proportion to the inflammation.

It has been quite conclusively proven that the products of inflammation of the brain and cord are washed from the depths of the affected area and not simply from the surface of the brain and spinal cord alone. Investigators have found when treating animals with a certain type of brain and cord disease by means of this procedure, that the animals showed a very small percentage of lymphocytes in the first drops of spinal fluid collected, whereas after forced spinal drainage had taken place for some time only lymphocytes were found. It has been pointed out that with the application of this method of treatment the cellular picture of the cerebrospinal fluid usually shifted from a leucocytic to a predominantly lymphocytic one, and that forced spinal drainage probably increased the transfer of immune bodies from the blood to the spinal fluid.

The most effective method of making the blood hypotonic is by injecting a hypotonic solution of sodium chloride into the blood stream, 0.45 per cent solution being generally used. The solution must be injected slowly, not faster than one liter in an hour. Intravenous injection of the solution is essential, but plain water taken in large quantities by mouth or rectum is a further aid. The method of procedure consists in continuously draining spinal fluid from the subarachnoid space and from the ventricles through a lumbar puncture needle, which is allowed to remain in place for the desired period of the drainage. To facilitate drainage, after a spinal puncture is done, the patient is sometimes put on a Bradford frame, with a window cut at the lumbar region so as to allow the fluid to drain from the needle into a container. Some operators have used a needle with a flat phlange which fits against the skin of the back and which is held in place by adhesive tape, thus allowing the patient to lie on the side or the back at will. However, in this way, the fluid must drain into absorbent pads and all of the fluid cannot be collected.

For the reason that the intravenous injection of a hypotonic sodium chloride solution will immediately raise intracranial pressure, it is important to do an initial spinal drainage before the introduction of the solution into the vein is begun. The salt solution is administered in large volumes, ranging from one to three liters during the course of several hours. The duration of the drainage varies from a few hours to several days. At times, it is continued for a longer period. The frequency of repetition is rarely more than once a week, with a short number of repeated drainages. Treatment may be maintained for as long as two or three weeks in the face of the more desperate and acute infectious processes. In one of our cases, suffering with bacillus pyocyaneous meningitis in which the method of continuous spinal fluid drainage was used, drainage was continued through a lumbar puncture needle for about three months, with only short periods, never longer than a day, in which drainage was not maintained.

A trial of this procedure is indicated, we fell, in the presence of any acute or chronic infection of the central nervous system. Its greatest usefulness is in the treatment of those diseases of the central nervous system characterized by perivascular round cell infiltration, of which encephalitis, poliomyelitis, meningitis and myelitis are typical examples. The procedure is an exceedingly safe one, provided the cases are properly selected and there are no contra-indications. It is not advised in any form of acute obstructive hydrocephalus for the reason that the pouring out of fluid through the choroid plexus would cause a dilatation of the ventricles and an exaggeration of the pre-existing condition. This treatment is contra-indicated when there has been a recent hemorrhage into the brain, or in the presence of a cystic tumor of the brain, and in certain conditions of acute myelitis in which the cord is so swollen as to cause a spinal block. In the latter condition, if a combined cisterna magna and lumbar puncture be done, there is less likelihood of trouble. Experimental evidence has shown that there is no material increase in the blood volume or in the venous pressure. There is, therefore, no undue strain put on the cardiovascular system. It is not advisable to use this method of treatment in the presence of marked cardio-renal deficiency, nor in the presence of acute inflammatory processes elsewhere in the body, unless these inflammatory processes be in the kidney or bladder. In inflammatory conditions there is an increased permeability of the capillary walls in such regions, and there occurs an outpouring of fluid at the point of inflammation. This method gives rise to some alarm in cases of severe bronchitis and

the like. Headache as a complication of forced spinal drainage is sometimes encountered early in the course of treatment. It can usually be stopped by putting the stilette back into the lumbar puncture needle for a short period of time, thus temporarily increasing intracranial pressure and thereby relieving the "pull" on the meninges, which as a rule causes the headache.

There is a decided difference between forced spinal drainage and continuous spinal drainage. In the latter, the needle is simply allowed to remain in the lumbar space for a period of hours, days or weeks, and the fluid is permitted to drip continuously. This method allows the drainage principally of that fluid which is in the subarachnoid space and in the intracranial cavities, whereas in forced spinal fluid drainage there is a washing out and a purging of the perivascular and perineural spaces, as well as a bathing, to some extent, of the cells themselves. There is a very definite exudate of lymphocytes into the subarachnoid spaces by this method of therapy.

The results obtained in our own cases, and in those reported in the literature, show that in some instances the ultimate outcome was most favorable. In others, the results were unfavorable, but in no cases so far reported, as far as I have been able to find in the literature, was there a failure to observe a profound symptomatic alteration in response to this treatment. There have been reported cases of chronic, progressive encephalitis of between six and seven years duration in which there was a certain amount of improvement. It would seem necessary, therefore, to assume that there is some form of tissue change which can cause a symptom to persist for many years without becoming permanently structuralized, and that this pathological condition responds, at least temporarily, to forced spinal drainage. This is true in any number of cases of disseminated sclerosis in which there has been reported prompt improvement in symptoms following this method of therapy. We have had no experience in treating the Parkinsonian syndrome by this method, but investigators have felt that certain of these cases were improved by it. Sydenham's chorea is a type of encephalitis, and the good results in these cases have been particularly striking. In certain cases improvement has been marked on the morning after treatment, and even more striking improvement has been noted on the second day. It has occasionally been necessary to repeat this treatment in cases of chorea. Various forms of meningitis have been treated by this method. Septic meningitis, if the infection has not been too firmly established, has frequently been materially improved and in certain cases has been cured by this method. Syphilitic meningitis and other forms of syphilitic infection of the central nervous system have been treated successfully in this manner. There are reports in the literature of encouraging results obtained in the treatment of poliomyelitis by forced spinal drainage, and also in certain clinically diagnosed but unproven cases of tuberculous meningitis.

CONCLUSIONS

1. Theoreticaly, forced spinal drainage is sound therapy.
2. The method is believed to be a safe one.
3. It may be combined with other types of treatment, and sera suited to an individual case may be used in conjunction with it.
4. It has been shown that it is both safe and rational to combine the forcing of fluids through the central nervous tissue with continuous or frequent drainage of the cerebro-spinal fluid in treatment of patients with any infectious disease of the central nervous system.
5. The real value and the limitations of this procedure can be established only by further clinical experience.

Professional Building.

DISCUSSION

DR. DAVID C. WILSON, University: This paper of Dr. Gayle's gives us for the first time a description of this new procedure which may be of some value in the treatment of central nervous system disease. Fremont Smith, nearly ten years ago, started forced drainage but he gave his fluids by mouth and injected pituitrin to prevent the fluid from passing through the kidneys, in this way increasing the fluid in the blood, causing the flow of the fluid into the spinal canal. This method is different in that the hypotonic saline in the vein seems to cause more fluid to flow through the central nervous system and opens up new passage ways. Kubie and Retan have investigated this method very thoroughly by experiments on dogs and have used it clinically. There are about seventy-five cases in the literature in which this method has been used and the results reported. Dr. Gayle has covered these in his paper. In our own experience we treated one case of brain abscess in the frontal lobe without very much success. We also treated one case of meningo-encephalitis in which there was a blockage of the subarachnoid space with increased intracranial pressure. Forced drainage decreased

the pressure and seemed to open up the space for drainage. This procedure offers a great deal of hope in meningitis and in encephalitis. There is very little discomfort especially if you start the fluid in soon after starting to drain off the spinal fluid. There seems to be very little danger to the procedure. Dr. Gayle has described a very interesting procedure which is rational in the treatment of central nervous system diseases. It is still in its beginnings but I believe it promises much.

DR. W. GAYLE CRUTCHFIELD, Richmond: During the past few years we have used continuous drainage in most of our cases of acute pyogenic meningitis. The results have been encouraging and we feel that it is the only means at our disposal for rendering the patient more comfortable and probably reducing the mortality.

There is a difference in the principle of this method and that of forced drainage. I believe that in the chronic infections of the nervous system, where there is little if any alteration in the chemistry of the spinal fluid, the method of choice would be that of using hypotonic solutions. In acute pyogenic meningitis, however, I believe there is an increase in the osmotic pressure of the cerebro-spinal fluid to a point where isotonic solutions in the blood relatively become hypotonic in their action. If this be true, then there should be no practical difference in the two methods for infections of this type.

There is one point I would like to stress and that is the marked improvement in the clinical picture following drainage. The patient is far more comfortable. Headache and vomiting are lessened. Convulsions usually cease and there is a decided lowering of the body temperature. After such an improvement has been brought about, the patient is more able to retain fluids and nourishment and therefore has a better chance to withstand the effects of the disease.

DR. F. D. WILSON, Norfolk: I should like to ask Dr. Gayle if he has had any experience with continuous spinal fluid drainage in chorea.

DR. FRANK REDWOOD, Norfolk: Not so many years ago, when we saw acute infections of the nervous system we did not do anything for them, because we did not know what to do. While my personal experience has been rather limited with this procedure, it seems to me it is a very valuable treatment and that it will save a good many cases.

DR. HOWARD R. MASTERS, Richmond: I enjoyed Dr. Gayle's paper and think it is a real contribution to this subject—certainly if we consider meningitis an infectious proposition, such as it is. In the serous types, where the pathways of the spinal fluid are more or less blocked, if we can keep the pathways washed out and clean after we reduce the pus, I think we can expect much better results from this type of treatment.

I believe I understood Dr. Gayle to say that cases of disseminated sclerosis improve on forced drainage. General experience shows that lumbar puncture, in disseminated sclerosis, frequently aggravates the condition. Personally, I have seen cases who were improving from their symptoms made worse by a test puncture at which four or five c.c. was withdrawn. I should like to hear him express himself on that.

DR. GAYLE, closing the discussion: In answer to Dr. Wilson's question concerning the treatment of chorea by forced spinal drainage, I would say that we have treated only one case of chorea by this type of therapy. There was, too, in this case, some question as to the diagnosis. After giving her about 2,000 c.c. of hypotonic salt solution by vein and draining her subarachnoid space for six or eight hours, she had very considerable relief from choreiform movements and was better for a time. We also treated one case of disseminated sclerosis that had a very prompt remission following forced spinal drainage, but whether this remission would have occurred without treatment, I do not know. It is interesting to note, however, that other observers have treated a larger series of disseminated sclerosis by this method, and have reported gratifying results.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. WILLIAM LETT HARRIS, 1112 Matoaka Street, Norfolk.

President-Elect—MRS. JOSEPH BEAR, 3012 Monument Avenue, Richmond.

Recording Secretary—MRS. FLETCHER J. WRIGHT, 49 South Market Street, Petersburg.

Corresponding Secretary—MRS. CHARLES A. SAUNDERS, 1000 Gates Avenue, Norfolk.

Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Avenue, Richmond.

Our Pioneer Heroine of Surgery—Mrs. Jane Todd Crawford.*

Jane Todd Crawford was born in Rockbridge County, Virginia, in 1763. She was the second of six children. She had the usual educational advantages of her day. As a girl she declared she would learn to cook and keep house, to spin and to weave and marry a farmer. It is said that she was a good cook and housekeeper and, when she was thirty-one years of age, she married Thomas Crawford, a farmer. They remained in Virginia eleven (11) years, when they moved to Green County, Kentucky. This trip was made on horseback.

Mrs. Crawford was the mother of five children. Four (4) years after they moved to Kentucky, when 46, Mrs. Crawford was afflicted by a peculiar and

*Material for this article abstracted from paper given by Mrs. Arthur Thomas McCormack before the Filson Club in 1932.

XUM

painful ailment. Local physicians were powerless and puzzled. They called in consultation, Dr. Ephraim McDowell, an unusually successful practitioner, from Danville, Kentucky, sixty miles distant.

On examination, he recognized that she did not require the delivery of twins, as was supposed, but had a foreign growth in her abdomen. Dr. McDowell explained the condition to Mrs. Crawford, told her that relief might be obtained from an operation; but that it would only be an experiment, as the operation had not been attempted, so far as he knew.

Mrs. Crawford agreed to the experiment. The trip was made over the mountains on horseback. This was in 1809, before the discovery of anaesthesia, and our heroine repeated psalms, while a 22½ lb. tumor was removed from her abdomen.

Dr. McDowell writes that, in five days after operation, he found her making her own bed—and she made the trip home in twenty-one days. The following year the Crawfords moved to Indiana, where for thirty-two years, Mrs. Crawford led a useful and active life.

Kentucky has honored Mrs. Crawford by naming the road which she traveled from Greensburg to Danville, "The Jane Todd Crawford Trail."

There should be other memorials to honor this woman.

The operation has resulted in relief, both physically and mentally, to womankind everywhere; Virginia was the birthplace of both Dr. McDowell and Mrs. Crawford; the operation was performed in Kentucky; Mrs. Crawford lived the last 30 years of her life in Indiana and is buried there; so it seems that the nation should have an opportunity to pay tribute to her.

The Auxiliary to the Lynchburg Academy of Medicine.

Eighteen ladies met in Lynchburg, in March, and organized this Auxiliary with Mrs. F. O. Plunkett of that city as president. No definite plans were made at that time but at the meeting early in May, it was decided to have a benefit bridge party at the Virginian Hotel, to raise money for any charitable purpose which might appeal to the members. The benefit party, held later in May, was quite a success and the Auxiliary was thus enabled to help the milk fund in the public schools. The next meeting will be held in the Fall.

Public Health Statistics

WARREN F. DRAPER, M. D.
Health Commissioner of Virginia

The communicable disease report received at the office of Dr. G. F. McGinnes, State Epidemiologist, during May, 1934, showed the following cases: Typhoid and Paratyphoid Fever, 30; Diphtheria, 41; Scarlet Fever, 101; Measles, 5,061; Meningitis, 7; Poliomyelitis, 0; Typhus Fever, 2; Rocky Mountain Spotted Fever, 5.

Typhoid and Paratyphoid Fever was reported from the following counties: Alleghany, 1; Augusta, 1; Campbell, 1; Frederick, 1; Greenesville, 1; Madison, 1; Pittsylvania, 2; Prince William, 1; Rappahannock, 2; Scott, 2; Shenandoah, 1; Smyth, 1; Southampton, 1; Tazewell, 3; Washington, 1; Wise, 1; Danville City, 1; Newport News City, 3; Norfolk City, 1; Petersburg City, 2; Richmond City, 2.

Epidemic Meningitis was reported from: Pulaski, 1; Russell, 1; Warren, 1; Lynchburg City, 1; Norfolk City, 2; Richmond City, 1.

Rocky Mountain Spotted Fever was reported from the following counties: Dickenson, 1; Madison, 1; Wise, 1; Richmond County, 2 (refered to in June issue).

The two cases of Typhus Fever were reported from Prince William County and Hanover County.

The number of cases of diphtheria has decreased from sixty-four cases in April to forty-one cases in May. They were scattered in twenty counties and five cities.

Scarlet Fever cases were reported from thirty-five counties and seven cities.

The cases of measles were scattered in eighty-nine counties and ten cities.

POLIOMYELITIS: A news letter was issued May 29, 1934, to all State Health Officers by the United States Public Health Service regarding an outbreak of poliomyelitis in Los Angeles County, California. Cases reported to that date were as follows:

	Cases
Los Angeles City:	
Week ended May 4, 1934	2
May 11, 1934	7
May 18, 1934	9
May 25, 1934	51
Los Angeles County (outside city):	
Week ended May 5, 1934	5
May 12, 1934	15

Up to May 29th no unusual prevalence of poliomyelitis had been reported to the United States Pub-

lic Health Service this year from other parts of California, or from any other States. In 1925, 1927 and 1930, which were years of high incidence of poliomyelitis in Los Angeles, the increased prevalence began somewhat later and reached the peak in July. The previous maximum number of cases in one week was forty-nine cases for the first week of July, 1930.

In Virginia thirty-nine cases occurred in the year 1933—seven cases occurred in August, ten in September and nine in October. Nine cases have occurred in Virginia thus far this year—three in January, two in February and four in March.

A very excellent pamphlet (fifty-five pages) is obtainable from the American Medical Association, Chicago, Illinois. This pamphlet was prepared by a special committee on poliomyelitis in connection with the American Medical Association's exhibit on poliomyelitis at Milwaukee in 1933. The pamphlet contains practical suggestions on the most recent aspects of diagnosis and treatment. Copies may be seen in the Library of the State Department of Health, Room 719, State Office Building, Richmond, Virginia.

Convalescent serum is available at cost at the State Department of Health.

Truth About Medicine

In addition to the articles enumerated previously, the following have been accepted by the Council on Pharmacy and Chemistry of the A. M. A.:

Cheplin Biological Laboratories, Inc.
- **Ampule Solution Procaine Hydrochloride 2 per cent, 1 c.c.**
- **Ampule Solution Procaine and Epinephrine, 3 c.c.**
- **Ampules Bismuth Subsalicylate 2 grains (0.13 Gm.) in Oil, 1 c.c.**
- **Ampules Solution Mercury Succinimide 1/6 Grain (0.01 Gm.), 1 c.c.**

Lederle Laboratories
- **Refined Diphtheria Toxoid (Alum Precipitated)**

Schering & Glatz, Inc.
- **Urotropin**
  - **Drotropin Tablits, 5 grains (0.3 Gm.)**
  - **Urotropin Tablets, 7½ grains (0.5 Gm.)**

Ucoline Products Company
- **Ucoline Calcium Phosphate Cocoa Wafers.**

Book Announcements

Nervous Breakdown: Its Cause and Cure. By W. BERAN WOLFE, M. D., Director of the Community Church Mental Hygiene Clinic. New York. Farrar and Rinehart, Inc., New York. 1933. Octavo of 240-xv pages. Cloth. Price, $2.50.

Once, twice, three times have I read Nervous Breakdown; its cause and cure, by Dr. W. Beran Wolfe. I wish I had written it; yea, more, I wish I could have written it.

The purpose of the volume of two hundred and forty pages is to help the nervous person to an understanding of himself or of herself. I assume that the author uses nervous breakdown as a synonym for mental or emotional maladjustment. He makes it plain that material nerves and so-called nervousness have little to do with each other. The nervous person may be physically fit, but otherwise helplessly unfit.

Dr. Wolfe thinks of the universe as occupied by two things—the individual and everything else. If the individual does not live life trippingly he or she must be out of tune either with self or with some of the things in that self's particular universe. There are no accidents in the world of the individual. People do not accidentally become nervous, nor do they snap out of a nervous upheaval. In this domain causes are at work and consequences are inevitable. But the causes are often hidden and unknown, and in consequence the resulting nervousness seems to be a senseless visitation of a mysterious affliction.

No other mortal is quite so subjective in thought as the neurotic. All of such an individual's worthwhile world is within. Without help such an individual is both unable and unwilling to make the condition objective. Because it is not easy to look one's own nervous self full in the face. The nervous person's energy—mental and physical—is engaged in hiding self from self. The neurotic is always engaged in a foot-race with himself—in attempting to run away from himself; or in dressing his neurotic self up in haberdashery that will be unobjectionable to himself. Now, Dr. Wolfe introduces the nervous patient to himself. Prior to such introduction the two, though intimate companions,

are strangers. After they become thoroughly acquainted the well person discovers that he is no longer in need of his nervous devices, and they disappear. Every nervous person is at least two, if not more, individuals. For such a person to get well means for that person to get back to being one person.

We are all much more alike than unlike. When we read about nervousness in others we are becoming better acquainted with ourselves.

Each of the seven chapters is as entertaining as Dr. Jekyll and Mr. Hyde for the names of both those citizens occupy many columns in every telephone directory. The first two or three chapters deal with causes; succeeding chapters with manifestations. The best plan is to read them all, from start to finish, once, twice—assimilation is a slow process. In exchange for 2.50 Messrs. Farrar and Rinehart will give up a copy of it. The buyer gets the better end of the bargain. I wish I had not read it—so that I might read it for the first time. The only interesting people are nervous people.

J. K. HALL.

Nauchnaya Leteratura CCCP, 1928. Meditsena. Moskva. 1931. (The scientific literature of the USSR for 1928. Medicine. Moscow.)

Russian scientists are seriously shut in and isolated from the rest of the world because so few people know their language. The result is that their work is largely ignored.

This publication is an attempt to gather together and present the scientific works published in Russia during 1928. This particular volume covers medicine only and yet it is a stately book 7x10½ inches in size and contains 837 pages of fine print. It gives the name of the author, the title of the book or article and a very short abstract. There are 11,012 such books or articles listed and these do not include the numerous articles published by Russians in German, French and English periodicals. There is a list of 231 Russian medical periodicals in which these articles appeared.

When one looks at this large book filled with their works and recalls the tremendous advances that have been made in Russian medicine during the last six years, one wonders what they may not be doing today.

The titles of their articles sound very familiar and show that their problems are very similar to our own. For example:

Acute poisoning with wood alcohol; Ionization of the air in Kislovodsk; The permanent results of sanitarium treatment of pulmonary tuberculosis: Post-operative care; The operating room as a possible source of infection; The incidence of trichinosis in White Russia; A colorimetric method for detecting ergot in flour; Dentistry in America; Actinomycosis of the bladder; Plastic restoration of the urethra; Hypnotic analgesia in labor; A case of simultaneous intra- and extra-uterine pregnancy; The pyrogenic treatment of syphilitic meningitis; Experimental studies of intra-ocular pressure.

There is an author index of 30 pages (about 8,000 names) and a subject index of 46 pages.

E. C. L. MILLER.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1933. Cloth. Price, Postpaid, $1.00. Pp. 188. Chicago: American Medical Association.

The main bulk of the volume, which is, incidentally, considerably increased over that of recent annual volumes, is taken up with reports on products which the Council has found unacceptable for inclusion in New and Nonofficial Remedies.

A feature of marked current interest in this volume is the preliminary report on Alpha-Dinitrophenol, the new drug for acceleration of cellular metabolism. The Council voices a warning on the dangers attending the use of this drug; this warning has been increasingly justified in reports of fatalities since the appearance of the Council's report in July of last year. There are a number of other preliminary reports which make this volume most interesting. Of interest also is the Council's second report on the intravenous use of barbital compounds which is the result of a questionnaire sent to representative physicians. In view of the answers to the questionnaire, the Council reaffirmed its previous decision concerning the limitations of intravenous use of barbital compounds; namely, that these preparations should be administered intravenously only in a limited number of conditions in which administration by other routes is not feasible. The report carefully details these conditions.

Hospital Service in the United States. 1934. Thirteenth Presentation of Hospital Statistics by the Council on Medical Education and Hospitals of the American Medical Association. The 1933 Census of Hospitals. Hospitals Registered by the American Medical Association. Reprinted from the Hospital Number of the Journal of the American Medical Association, March 31, 1934. Pamphlet. Price, 50 cents.

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Editorial

Take Thought for the Morrow.

At its last meeting the Medical Society of Virginia "resolved that the Public Relations Committee of the Medical Society of Virginia disapproves of the plan proposed by the State and Federal Emergency Relief organizations for the compensation of physicians on a fee schedule basis for the care of the indigent sick. . . ." Seven months later Administrator William A. Smith advised the medical profession of Virginia that "the Virginia Emergency Relief Administration has adopted a schedule of modified fees for medical service which will become operative at once throughout the state. . . ." Had the opinion of many thoughtful members of the society been regarded we would not be subjected to the chagrin of seeing a resolution of the Medical Society of Virginia set at naught. The majority of Virginia physicians are probably agreed that it was a mistake to have passed such a resolution.

It must be clear to most of us that the medical profession of Virginia will have to face many economic problems in the future entirely new to them and some apparently at variance with the traditional point of view. It is inconceivable that the economic revolution in the midst of which we find ourselves should continue to leave the skirts of medicine entirely untouched. We cannot live and practise medicine out of joint with the times. We must be prepared for changes. We must initiate those changes. We cannot successfully oppose the Federal government in its interpretation of what it considers the best public policy or when it acts according to its lights in the interests of the common weal. We must go along with it. Why wait for coercion? It is better to lead than be led.

Thymic Hormones.

The controversy is an old one. Is the thymus a lymphatic or an epithelial structure? Does it play a part in blood formation? Is it concerned with growth? The interrogation seems to have been lifted from at least one of these questions by the recent work of Dr. Leonard G. Rowntree, Director of the Philadelphia Institute of Medical Research. Working with rats, he appears to have shown that when properly prepared extracts of the thymus are injected into succeeding generations of rats, extraordinary accelerations of growth and sexual precocity are to be observed. Under the influence of Rowntree's extracts, rats who would normally have procreated between the ages of fifty and seventy days acquired this physiological function as early as the twenty-ninth day. Their accelerated growth was equally dramatic. By the third generation rats who had been subjected to thymus inoculations weighed one-third more at birth than the average new-born rat, and teeth, hearing and sight developed much more rapidly than was normal. From these experiments we infer that another function of the thymus may be the speeding up of certain vital processes. It is conceivable that deprived of natural inhibiting factors such as exist probably in the other endo-

crine glands the thymus would thrust adulthood upon us much sooner than is now the case. In the search for longer days, therefore, man may simply have to find some safe and workable method for retarding thymic activity.

An Article Worth Reading.

Those who missed the important article *Standard Treatment Procedure in Early Syphilis* by John H. Stokes and his collaborators in the April 21st issue of the *Journal of the American Medical Association* should make it their business to read this report without delay. It is based on a "genuinely massive investigation of world-wide scope," and has about it the aura of authority. The gist of the report may be given in the author's own words: "The modern system for the treatment of early syphilis must be continued; it must call for not less than twenty, and, unless special resistiveness is encountered, hardly more than thirty injections of the arsphenamine; and in accordance with the principles generally recognized in the treatment of the disease, the system should call for continued treatment with heavy metal for one year after all symptoms and signs of the disease have disappeared. In order to determine this end point, blood tests should be taken at least at the beginning and end of each arsphenamine course and the patient should be warned of the lack of significance of the negative report from the standpoint of the schedule."

There are no doubt many physicians who would welcome an equally authoritative statement of a standard therapeutic procedure in late syphilis. For instance, what is to be recommended to the many Wassermann-positive-symptom-free persons whom the internist discovers annually in the course of systematic physical examinations?

Local Anaesthesia.

This year marks the fiftieth anniversary of the discovery of local anaesthesia. The American Association of the History of Medicine at its meeting in Cleveland the other day paid tribute to Sigmund Freud and Karl Koller through whose imaginations and experiments the anaesthetizing properties of cocaine were demonstrated in 1884. "The divine plant of the Incas" had been known to the natives of Peru in South America from the earliest times and its medicinal properties appreciated. The active principle was isolated by Gardeka in 1855 and called erythroxyline, and by Albert Niemann in 1858 and called cocaine. Anrep, Collin and Fauvel had studied the physiological value of cocaine before 1884. Hard upon the epoch making discoveries of Freud and Koller the practical application of cocaine was begun in earnest. Within the same year Anton Wölfler in Germany and Howard Kelly in this country were using it. In 1885 William S. Halsted employed cocaine in general surgery and James L. Corning, of New York, used it as a spinal anaesthetic. Infiltration anaesthesia was introduced by Carl Schleich in 1894 and conductive anaesthesia by George Crile in 1897. Eucaine was introduced by Merling in 1896 and novocaine by Alfred Einhorn in 1905.

Virginia Flora.

At this time when sufferers from hay fever are hopefully appealing to the allergist and the allergist is busily desensitizing those who have put their trust in him, the need for an accurate and thorough-going botanical survey of Virginia and vicinity is again brought home. There is available, it is true, P. R. Merriman's *Flora of Richmond and Vicinity,* as well as the *Flora of the District of Columbia and Vicinity,* but we should have more complete knowledge of all the flora of our State—trees, grasses and weeds, with their pollination seasons. What has been accomplished in Kansas should be done in Virginia.

Preserving History.

A few days ago on a commanding hillside overlooking the James River, the city of Richmond and the country beyond, a bronze tablet embedded in a granite boulder was unveiled by the Daughters of the Confederacy. The spot marks the place where the Chimborazo Hospital stood during the Civil War. This was the largest hospital in the world up to that time, a cantonment built much after the order of our World War hospital structures, consisting of one hundred well ventilated wooden buildings, one hundred feet long by thirty feet wide, separated by alleys and streets and organized into five divisions of thirty wards each. Here under the command of Surgeon James B. McCaw and a corps of fifty-odd assistant surgeons and forty-five matrons, 77,000 soldiers were cared for during the course of the war. The elaborate structure was well supplied with water, ice-houses and an excellent system of sewage disposal. A bakery, a brewery, soup houses, a nearby farm called "Tree Hill" and a trading boat on the James River and Kanawha Canal were important accessories.

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What the Daughters of the Confederacy have done for the Chimborazo Hospital and what the Medical Society of Virginia has done in the past—notably in making a shrine of the birthplace of Walter Reed and of marking the last resting place of John Peter Mettauer—the Society can do again. It should annually mark some spot in the State of medico-historic importance. It has made a start in preserving the rich heritage of the Virginia profession but much work remains. It should have a historical committee constantly functioning. Its archives should contain brief but accurate biographical sketches of all members. It should preserve in permanent form all writings of members, for by the systematic collection and preservation of current historical material the task of some future historian of medicine in Virginia will be lightened. Members who are historically minded should set up medical history societies in the larger centers. The Richmond Academy of Medicine has recently organized a section on the History of Medicine, the by-laws providing for non-resident membership, and this section would welcome to its ranks members of the profession from anywhere in the state.

President's Message

An Explanation.

Since the development of the Federal Relief Administration and the effort that has been made to establish a State-wide fee system, it may be wise to state the position taken by most of the officials of the State Society. Those members of the Society, who were present as members of the House of Delegates, at Lynchburg, last October, will recall the resolution presented by Dr. Alex. F. Robertson, Jr., of Staunton, at that time Chairman of the Committee on Public Relations. This resolution, which was passed by a large majority, stated that the Medical Society of Virginia would not adopt a fixed fee for FERA work but left it to each local society or community to make such arrangements as the local physicians thought wise, with local administrators or whoever should be in charge of such work. Any one not familiar with this resolution, may find the entire act as adopted and its discussion on pages 563-4 of the December, 1933, issue of the VIRGINIA MEDICAL MONTHLY. This resolution was presented and adopted by the House of Delegates in anticipation of this very emergency and is the will of the Society relative to this phase of the Emergency Relief Work. However there is nothing whatsoever in this resolution, which prevents any local society making any arrangement it may deem fit about this matter.

One large and influential component Society and several influential doctors, who are members of the State Society, have asked the President to call a meeting of the Council, which is the ad interim body, which may act in emergencies between the meetings of the State Society. After hearing from the majority of the Councilors, however, it has been ascertained that most of them are opposed to any meeting for considering this matter and they believe that the resolution adopted at Lynchburg should be the policy of the State Organization; furthermore, it is the very decided opinion of the President that the Council has no jurisdiction in this matter to revoke or supersede a resolution passed by the House of Delegates, so it has been decided not to call a meeting of the Council for the purpose of attempting to fix a State-wide fee for this Emergency Relief Work.

It may be stated here, that the President of the State Society was made a member of the State Advisory Board (Medical) and named as the chairman of that body, without his consent and without notice until he was apprised of the fact by rather remonstrating letters from several parties. The President of this Society has attended no meetings of this Advisory Board and is in no way connected with that body. Of course he appreciates the honor of being associated with this group of distinguished physicians, who are members of this Board but deemed it unwise to accept the invitation on account of the position taken by the State Society, as well as his own personal convictions on the subject. Nevertheless, had not the majority of the Council been opposed, the meeting of that body would have been called.

R. D. BATES, M. D., *President.*
Medical Society of Virginia.

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Department of Clinical Education of the Medical Society of Virginia

Tenth Circuit of Courses in Pre-natal and Post-natal Care.

Beginning the week of July 9th the tenth series of five post-graduate courses in pre-natal and post-natal care conducted by Dr. M. E. Lapham, of Philadelphia, Field Clinician of the Joint Committee on Pre-natal and Post-natal Instruction, will begin in northeastern Virginia, the only section of the State yet unserved in a program of more than two years' duration.

By approval of the medical societies concerned and the effective assistance of interested individuals three of the study groups have been definitely organized for Alexandria, Fairfax and Fredericksburg. Through Dr. H. A. Latane and Dr. A. L. Carson, Jr., advance enrollments previously reported have been obtained from eight members in the Alexandria group and from nine members in the Fairfax group. Through Dr. Thomas B. Payne five advance enrollments have been secured for the Fredericksburg group, those of Drs. J. E. Cole, G. B. Harrison, T. B. Payne, E. R. Ware, and J. E. Shields.

Preliminary inquiry has disclosed sufficient interest among the physicians of Culpeper County to warrant anticipation of the formation of a group there. The Northern Neck Medical Society, which endorsed the organization of a class for its members almost at the beginning of the program of 1932, may succeed in enrolling a group of sufficient size for a course in Warsaw. Other societies are to vote upon the courses at later meetings and other applications to make the circuit a very full one are possible.

This tenth circuit of Dr. Lapham's classes is the last that is now being planned for him in Virginia. Every medical society in the State with enough members to form a class has been offered his services; every society but one that has acted has approved the work and only three remain to vote upon establishment or rejection of the courses.

Returns from the Ninth Circuit.

Such tangible measures of success as may be applied to any educational process seem as favorable for the ninth circuit as for those preceding. The rate of attendance of members was as usual over 75 per cent. Every member who has replied to the Joint Committee's request for comment on the courses has expressed his satisfaction with the return on his investment of time and money; and all but one, who was neutral, have written that they would like to have the opportunity of further study in other fields.

GEORGE W. EUTSLER,
Executive Secretary, Department of Clinical Education,
Secretary, Joint Committee.

Proceedings of Societies

The Fredericksburg Medical Society

Held a most interesting meeting on May 29th, in Fredericksburg, Va., at which time they had as their guests the members of the Piedmont Medical Society, the Loudoun County, Fauquier County, and Northern Neck Medical Societies, the officers stationed at Quantico, Va., Dahlgren, Va., and the officers of the C. C. C. Camps at Bloody Angle, Wilderness and Chancellorsville.

The scientific program consisted of the following papers which were very interesting and were freely discussed: The Acute Abdomen by Dr. J. M. T. Finney, and Fungi Infections of the Tongue, by Dr. Thos. R. Boggs, both of Johns Hopkins Hospital, Baltimore; Phallic Worship by Dr. F. R. Hagner, Washington, D. C.; and Sterilization of the Feebleminded by Dr. J. S. DeJarnette, Staunton, Va.

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Dr. W. A. Harris, Spotsylvania, is president, and Dr. E. R. Ware, Fredericksburg, secretary of the Society.

Norfolk County Medical Society.

At the annual meeting of this Society held on June 4th, the following officers were elected for the ensuing year: President, Dr. C. Carroll Smith; vice-president, Dr. James W. Hunter; and secretary-treasurer, Dr. Lockburn B. Scott, who was re-elected for the sixteenth consecutive year. All officers are of Norfolk. Delegates and alternates to the State Society were also named.

Dr. H. R. Drewry was elected to Honorary Membership in recognition of his long and useful membership in the Society. The following are recent additions to membership: Drs. Allen S. Lloyd, P. B. Stokes, and C. M. McCoy, all of Norfolk.

Roanoke Academy of Medicine.

At the regular meeting of this society on May 7th, the following program was presented: Purulent Pericarditis, with case report by Dr. Hal Davis; Afebrile Empyema, with case report by Dr. H. R. Hartwell; Serum Treatment of Tularemia, by Dr. S. F. Driver; and Some Urological Problems of Childhood, by Dr. J. A. C. Colston, of Johns Hopkins Hospital.

The last hospital meeting of the year was held at the Jefferson Hospital on May 21st, at which time the following papers were presented: Value of Roentgen Ray in Pregnancy, by Dr. C. H. Peterson; Treatment of Perforated "Peptic" Ulcer, by Dr. Hugh H. Trout; Arachnidism, by Dr. A. W. Smith; Urinary Suppression, by Drs. W. W. S. Butler, Jr., and George B. Lawson; Spinal Fluid Drainage, by Dr. O. D. Boyce; and case reports by Drs. George B. Lawson and Roger DuBose.

Delegates and alternates to the State Society meeting were elected at this time.

It was decided that the Academy should hold its annual picnic in June, but there should be no further scientific meetings until September.

The Lynchburg Academy of Medicine

Held its regular monthly meeting on June 4th. Dr. T. P. Sprunt, of Johns Hopkins Hospital, Baltimore, presented a comprehensive and instructive paper on the "Treatment of Common Types of Chronic Arthritis."

Delegates and alternates to the State Society meeting were named at this time. A motion was passed reducing the annual dues to one-half, for those members living more than ten miles from the city limits. A resolution was also passed agreeing to the scale of fees suggested by the Medical Advisory Board of the F. E. R. A. for those cases on the Federal Relief rolls.

The Medical Association of the Valley of Virginia

Held its Spring meeting on May 31st at Rockingham Memorial Hospital, Harrisonburg, Va. Dr. E. C. Stuart, of Winchester, presided and delivered his presidential address. Dr. H. B. Mulholland, University, Va., was the invited guest, and the following members also presented papers: Dr. H. Grant Preston, Harrisonburg; Dr. T. F. Kennan, Raphine; Dr. Ellsworth Johnson, Winchester; and Dr. G. S. Hartley, Clifton Forge. Dr. Alex. F. Robertson, Jr., Staunton, is secretary, and Dr. L. F. Hansbrough, Front Royal, treasurer.

News Notes

Commencement Exercises of Virginia's Medical Schools.

MEDICAL COLLEGE OF VIRGINIA

The 1934 commencement exercises of the college started on May the 26th with Stunt Night followed by a dance at Jefferson Hotel. The following day, the baccalaureate sermon to the graduates was given by Rev. Churchill J. Gibson, D. D., at St. James Episcopal Church.

The alumni held sway on Monday, the 28th, with the annual meeting, golf tournament played by the faculty *versus* the alumni, and the alumni dinner that evening. Dr. Clifton M. Miller, Richmond, was elected president of the Alumni Association for the coming year, with Dr. Elisha Barksdale, of Lynchburg, as first vice-president.

On Tuesday, a buffet luncheon was given for the Board of Visitors, Faculty, Alumni and Senior

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Classes at Cabaniss Hall. The final exercises were at 8:00 P. M. that evening, at Mosque Theatre, with Dr. Francis Pendleton Gaines, President of Washington and Lee University, as speaker. On this occasion, dipolmas were awarded to ninety-three graduates in medicine, twenty-six in dentistry, twenty-five in pharmacy, and thirty-nine in nursing. The annual reception and dance which followed at Jefferson Hotel brought to a close the ninety-sixth session of the college.

The following are graduates in medicine, with hospital appointments:

MEMORIAL HOSPITAL, RICHMOND—Drs. William Fielding Bryce, Jr., Richmond; Frank Woodson Jones, Oak Hill, W. Va.; William Samuel Lloyd, Bumpass; John Robert Massie, Jr., Perkinsville; Emmett Carlysle Matthews, Richmond; Pietro Nicolino Pastore, Bluefield, W. Va.; William Ribble Pretlow, Chester; Chester Loris Riley, Martinsburg, W. Va.; Clyde Arthur Smith, Rainelle, W. Va.; and Girard Vaden Thompson, Chatham.

THE TUCKER SANATORIUM, RICHMOND—Dr. Robert Syer Barrett, Smithfield.

JOHNSTON-WILLIS HOSPITAL, RICHMOND—Drs. Robley Dunglison Bates, Jr., Newtown; Robert DeVane Croom, Jr., Maxton, N. C.; and Hudson Mason Wingfield, Ashland.

STUART CIRCLE HOSPITAL, RICHMOND — Drs. Clarence Conway Chewning, Jr., Chilesburg; Thomas Bryant Pope, Drewryville; and Robert Vaughan Terrell, Richmond.

SHELTERING ARMS HOSPITAL, RICHMOND—Drs. James Dean Cregar, Pulaski; and Jamie Pleasant Scott, Stone Mountain.

ST. ELIZABETH'S HOSPITAL, RICHMOND — Dr. Franklin Heywood Goodwin, Clifton Forge.

ST. LUKE'S HOSPITAL, RICHMOND—Drs. George Louis Jones, Ridgeway; and Robert Sterling Montgomery, South Hill.

RETREAT FOR THE SICK HOSPITAL, RICHMOND—Drs. Richard Campbell Manson, Richmond; Kermit Jackson Moore, Cambria; and John William Whitlock, Charleston, W. Va.

GRACE HOSPITAL, RICHMOND—Dr. Reynolds Clinton Siersema, New York, N. Y.

PROTESTANT HOSPITAL, NORFOLK—Drs. Brock Darden Jones, Jr., Holland; and Fred Grant Pegg, Guilford College, N. C.

ROANOKE GENERAL HOSPITAL, ROANOKE—Dr. James Paul Kent, Wirtz.

GEORGE BEN JOHNSTON MEMORIAL HOSPITAL, ABINGDON—Dr. Vincent Edward Lascara, Norfolk.

LEWIS-GALE HOSPITAL, ROANOKE—Drs. Luther Burton Lowe, Roanoke; and John Harris Smith, Copper Hill.

CHESAPEAKE AND OHIO HOSPITAL, CLIFTON FORGE—Dr. Horace Dunbar Hoskins, Saluda.

ST. VINCENT'S HOSPITAL, NORFOLK—Drs. Arthur Seldon Mann, Jr., Elizabeth City, N. C.; and Irwin Matthew Nuckols, Richmond.

LYNCHBURG HOSPITAL, LYNCHBURG—Dr. Sam Silver, Richmond.

BUXTON HOSPITAL, NEWPORT NEWS—Drs. Ralph Judson Sykes, Jackson, N. C.; and Frederick Nimrod Thompson, Richmond.

CENTRAL DISPENSARY AND EMERGENCY HOSPITAL, WASHINGTON, D. C.—Dr. Alfred Abramson, Alexandria.

SIBLEY MEMORIAL HOSPITAL, WASHINGTON, D. C.—Dr. Alan Frank Kreglow, Martinsburg, W. Va.

GALLINGER MUNICIPAL HOSPITAL, WASHINGTON, D. C.—Dr. Clyde Garvice O'Brien, Appomattox.

WHEELING HOSPITAL, WHEELING, W. VA.—Dr. Edgar Charles Blum, Elm Grove, W. Va.

OHIO VALLEY GENERAL HOSPITAL, WHEELING, W. VA.—Dr. Harry Anthony Smith, Wheeling, W. Va.

BLUEFIELD SANATORIUM, BLUEFIED, W. VA.—Dr. Clarence Ivanhoe Butte, Jr., Matoaka, W. Va.

ST. MARY'S HOSPITAL, HUNTINGTON, W. VA.—Dr. Charles Fallon Davis, Jr., Roanoke.

CHESAPEAKE AND OHIO HOSPITAL, HUNTINGTON, W. VA.—Dr. Leonard Esker Neal, Huntington, W. Va.

HUNTINGTON MEMORIAL HOSPITAL, HUNTINGTON, W. VA.—Dr. Anna Theresa Swing, Rainelle, W. Va.

PITTMAN HOSPITAL, FAYETTEVILLE, N. C.—Dr. Samuel Clements Cox, Richmond.

CITY MEMORIAL HOSPITAL, WINSTON-SALEM, N. C.—Drs. Harvey Allen Eldridge, Dunn, N. C.; and George Howard Quillen, Roda.

DAVIS HOSPITAL, STATESVILLE, N. C.—Dr. Benjamin Hackett Harding, Yadkinville, N. C.

JAMES WALKER MEMORIAL HOSPITAL, WILMINGTON, N. C.—Dr. Frank Trumbo Harper, Jr., Kinston, N. C.

HIGHSMITH HOSPITAL, FAYETTEVILLE, N. C.—Dr. John McKamie Harry, Harrisburg, N. C.

ERLANGER HOSPITAL, CHATTANOOGA, TENN.—Dr. Henry Allen Brown, Charleston, W. Va.

UNIONTOWN GENERAL HOSPITAL, UNIONTOWN, PA.—Dr. John Morrison Brown, Summersville, W. Va.

MONTGOMERY HOSPITAL, NORRISTOWN, PA.—Dr. Mildred Brynberg Forman, Elsmere, Del.

UNIVERSITY OF PENNSYLVANIA HOSPITAL, PHILADELPHIA, PA.—Dr. James Harrison Gordon, Richmond.

ST. VINCENT'S HOSPITAL, ERIE, PA.—Dr. Cecil Curtis Hatfield, Saltville.

ST. MARY'S HOSPITAL, PHILADELPHIA, PA.—Dr. Nathaniel Thomas Keys, Philadelphia, Pa.

ST. JOSEPH'S HOSPITAL, READING, PA.—Dr. Ralph Mitchell Mulligan, Uniontown, Pa.

HAMOT HOSPITAL, ERIE, PA.—Dr. Edwin James, Palmer, Richmond.

ST. VINCENT'S HOSPITAL, NEW YORK, N. Y.—Dr. Thomas Henry Deely, East Rockaway, L. I., N. Y.

MORRISANIA CITY HOSPITAL, NEW YORK, N. Y.—Dr. Milford Martin Greenbaum, New York, N. Y.

METROPOLITAN HOSPITAL, NEW YORK, N. Y.—Drs. Jerome Joseph Shapiro, Richmond; and Sol Charles Werblow, Newport News.

NEW YORK POLYCLINIC HOSPITAL, NEW YORK, N. Y.—Dr. Malcolm Greer Stutz, Southern Pines, N. C.

GREENVILLE CITY GENERAL HOSPITAL, GREENVILLE, S. C.—Dr. Robert Andrew Brown, Jr., Greenville, S. C.

WILMINGTON GENERAL HOSPITAL, WILMINGTON, DEL.—Dr. Virgil Jefferson Cox, Peach Bottom.

UNIVERSITY HOSPITAL, ANN ARBOR, MICH.—Dr. William Fredric Delp, Rural Retreat.

GRANT HOSPITAL, COLUMBUS, OHIO—Dr. John Camden Eakle, Sutton, W. Va.

WHITE CROSS HOSPITAL, COLUMBUS, OHIO—Drs. George Taylor Flesher, Ravenswood, W. Va., and William Riley Hutchinson, Boomer, W. Va.

HOSPITAL MUNICIPAL, GENERAL CITY HOSPITAL, MAYAGUEZ, PUERTO RICO—Dr. Carlos Encarnación-Vega, Cabo Rojo, Puerto Rico.

MUNICIPAL HOSPITAL, SAN JUAN, PUERTO RICO—Drs. Jaime Fuster y Fuster, Guayama, Puerto Rico; and José Roberto Vivas, Orocovis, Puerto Rico.

WISCONSIN GENERAL HOSPITAL, MADISON, WIS.—Dr. Claude Swanson Finney, Fredericksburg.

UNIVERSITY OF WISCONSIN HOSPITAL, MADISON, WIS.—Dr. John Leonard Jennings, Jr., Danville.

GORGAS HOSPITAL, ANCON, CANAL ZONE—Dr. Manuel Ferandez Fuster, Guayama, Puerto Rico.

MUHLENBURG HOSPITAL, PLAINFIELD, N. J.—Dr. Harry Lewis Glass, Carteret, N. J.

ORANGE MEMORIAL HOSPITAL, ORANGE, N. J.—Dr. Granville Musgrove Leaman, Brunswick, Md.

HOLY NAME HOSPITAL, TEANECK, N. J.—Dr. Joseph Herman Meadows, Oxford, N. C.

CHILDREN'S HOSPITAL, BOSTON, MASS.—Dr. Grey Carlton Hughes, Axton.

SOUTHERN PACIFIC GENERAL HOSPITAL, SAN FRANCISCO, CALIF.—Dr. Clarence Porter Jones, Jr., Newport News.

PIEDMONT HOSPITAL, ATLANTA, GA.—Dr. Jasper Herman Lamm, Lucama, N. C.

GRADY HOSPITAL, ATLANTA, GA.—Dr. Philip Wood Oden, Remington.

CHARITY HOSPITAL, NEW ORLEANS, LA.—Dr. James Edward Lipscomb, Jr., Greenville, S. C.

JACKSON MEMORIAL HOSPITAL, MIAMI, FLA.—Dr. Chaffee Aldred Scarborough, Franklin.

HILLMAN HOSPITAL, BIRMINGHAM, ALA.—Dr. Elam Cooksie Toone, Jr., Richmond.

Other graduates are:

Dr. Wilber Vinton Bradshaw, Victoria.

Dr. George Winford McCall, Richlands.

Dr. John Abb Payne, III, LaGrange.

Dr. David Edwin Plummer, High Point, N. C.

Dr. Hight Claudius Warwick, Orrum, N. C.

UNIVERSITY OF VIRGINIA

Commencement exercises of the Department of Medicine were held as usual in conjunction with those of the other departments of the University of Virginia, the dances and other events adding much to the social features of the occasion. Alumni day proved a general reunion occasion for all alumni regardless of their class affiliations and every one had a good time. Before degrees were conferred, Dr. John Lloyd Newcomb was installed as President of the University, the ceremony being very simple, but quite picturesque.

There were 390 graduates this year, fifty-two of these being from the Department of Medicine. Their names with hospital appointments follow:

UNIVERSITY OF VIRGINIA HOSPITAL, UNIVERSITY—Drs. George Robert Carpenter, Richmond; Walter Franklin Cole, Newport News; William Rollan

Hill, Statesville, N. C.; Lewis Littlepage, Jr., Norfolk; Charles Collins Orr, Jr., Asheville, N. C.; Lawrence James Pace, Harrisonburg; Mack Irvin Shanholtz, Winchester; Harry Benjamin Stone, Jr., Roanoke; and Fletcher Johnston Wright, Jr., Petersburg.

UNIVERSITY OF VIRGINIA, DEPARTMENT OF PATHOLOGY, UNIVERSITY, AND PRESBYTERIAN HOSPITAL, NEW YORK CITY—Dr. Noble Maxwell Goodloe, Staunton.

UNIVERSITY OF VIRGINIA, DEPARTMENT OF PATHOLOGY, UNIVERSITY—Dr. James Robert Shanklin, Gary, W. Va.

ST. ELIZABETH'S HOSPITAL, RICHMOND—Dr. John Newton Bowden, Red Hill.

MEMORIAL HOSPITAL, RICHMOND—Dr. Charles Lorraine Cabell, Richmond.

ST. VINCENT'S HOSPITAL, NORFOLK—Dr. Joseph Edward Gladstone, Jr., Exmore.

PROTESTANT HOSPITAL, NORFOLK—Drs. William Perry Moore, Jr., Norfolk; and Huge Page Newbill, Norfolk.

WESTERN STATE HOSPITAL, STAUNTON—Dr. John Omohundro Hurt, Roanoke.

JACKSON MEMORIAL HOSPITAL, MIAMI, FLA.—Dr. George Curtis Austin, Miami, Fla.

DUVAL COUNTY HOSPITAL, JACKSONVILLE, FLA.—Dr. Sullivan Gale Bedell, Jacksonville, Fla.

BAY VIEW HOSPITAL, BALTIMORE, MD.—Dr. George Simmerman Bourne, Wytheville.

UNION MEMORIAL HOSPITAL, BALTIMORE, MD.—Dr. William Allen Johns, Farmville.

CHURCH HOME AND INFIRMARY, BALTIMORE, MD.—Drs. Lewis Walke McIlhany, University; James Calvin Martin, Roanoke; and William Joshua Sturgis, Nassawadox.

BALTIMORE CITY HOSPITAL, BALTIMORE, MD.—Dr. John Hansford Thomas, Jr., Greenville.

VASSAR BROTHERS HOSPITAL, POUGHKEEPSIE, N. Y.—Dr. Harry Paul Browning, University.

BELLEVUE HOSPITAL, NEW YORK, N. Y.—Dr. Robert Nelson Cooley, Rural Retreat.

MORRISANIA CITY HOSPITAL, NEW YORK, N. Y.—Dr. Armando Joseph Lauritano, New York.

FRENCH HOSPITAL, NEW YORK, N. Y.—Dr. Richard Henry Smith, Stapleton, N. Y.

ORANGE MEMORIAL HOSPITAL, ORANGE, N. J.—Dr. Richard Reading Chamberlain, Maplewood, N. J.

BETH ISRAEL HOSPITAL, NEWARK, N. J.—Dr. Franklin Harry Cohen, Norfolk.

MERCER HOSPITAL, TRENTON, N. J.—Dr. George Alfred Hess, Bridgewater.

COOPER HOSPITAL, CAMDEN, N. J.—Dr. Isaac Nathan Patterson, Swedesboro, N. J.

LAKESIDE HOSPITAL, CLEVELAND, OHIO — Drs. William Clark Cooper, Langley Field; and William Clegg Eversole, University.

CITY HOSPITAL, CLEVELAND, OHIO—Dr. Lemuel Edward Mayo, Jr., Portsmouth.

CINCINNATI GENERAL HOSPITAL, CINCINNATI, OHIO—Dr. William Edgar Waddell, Jr., Lexington.

MCKEESPORT HOSPITAL, MCKEESPORT, PA.—Dr. Joseph Edwin Cox, Waynesboro.

GARFIELD MEMORIAL HOSPITAL, WASHINGTON, D. C.—Dr. Richard Earle de Butts, Upperville.

EMERGENCY HOSPITAL, WASHINGTON, D. C.—Dr. William Gilmer Puryear, South Boston.

WATTS HOSPITAL, DURHAM, N. C.—Dr. Howard Clark Glover, Jr., Newnan, Ga.

WILMINGTON GENERAL HOSPITAL, WILMINGTON, DEL.—Dr. John Bagby Haley, Charleston, W. Va.

DELAWARE HOSPITAL, WILMINGTON, DEL. — Dr. Roy Glenn Parks, Hopeton.

VIRGINIA MASON CLINIC, SEATTLE, WASH.—Drs. Walter Douglas Hankins, Johnson City, Tenn.; and William Virginius King, Jr., Thornhill.

BARONESS ERLANGER HOSPITAL, CHATTANOOGA, TENN.—Dr. Howard Thompson Holden, Rabun Gap, Ga.

NEW ENGLAND HOSPITAL FOR WOMEN AND CHILDREN, BOSTON, MASS.—Dr. Clara Lucille Hoye, Louisa.

MASSACHUSETTS GENERAL HOSPITAL, BOSTON, MASS.—Dr. Robert Fletcher Watson, University.

CHARLESTON GENERAL HOSPITAL, CHARLESTON, W. VA.—Dr. Joseph Leigh Hundley, Callands.

HUNTINGTON MEMORIAL HOSPITAL, HUNTINGTON, W. VA.—Dr. Israel Maurice Kruger, Norfolk.

CHARITY HOSPITAL, NEW ORLEANS, LA. — Dr. James F. Lane, Charlottesville.

Dr. Julian Booth Doss, Penhook, Va., is also a graduate of this class.

Dr. Draper to Return to the U. S. Public Health Service.

It is with sincere regret that Virginia doctors generally have learned that Dr. Warren F. Draper,

our State Health Commissioner for the past three years, has been recalled by the United States Public Health Service to duty as assistant surgeon-general. He will be located in Washington, and will be in charge of the Bureau of Personnel and Accounts, effective July 1st. Dr. Draper has served our State most efficiently and will be missed by the citizens of Virginia who wish him well in his new field.

Dr. Riggin to Succeed Dr. Draper as Health Commissioner.

Dr. I. C. Riggin, who since August, 1932, has been director of rural health and tuberculosis and of the out-patient service of the Virginia State Department of Health, has been appointed State Health Commissioner of Virginia to succeed Dr. Draper, effective July 1st.

Dr. Riggin is a native of Maryland but has spent a good part of his professional life in private practice and health work in Virginia. As evidence of his liking for Virginians, he married Miss Ruth Bradshaw, of Isle of Wight County, Virginia. They have made their home in Richmond for the past two years.

The new Health Commissioner has had wide training and experience in public health administration.

Alexandria Meeting.

Only a little more than three months remain before our annual meeting in Alexandria, October 9th-11th, and we hope our members count on turning out in large numbers for this occasion. As it is fifty-five years since our last meeting in that city, it will be the first time in the history of the majority of those who are able to attend that we have met in that historic city, so let's boost the meeting! By the way, if any of our members recall that meeting, we would be glad to hear about it.

Cards were recently sent all members, that those who wish may submit titles and abstracts for volunteer papers for the program. Don't forget that these have to be in the Society's office in Richmond by August 1st.

American Medical Association.

At the annual meeting of this Association, held in Cleveland, June 11th-15th, Dr. Walter L. Bierring, Des Moines, Iowa, succeeded to the presidency, and Dr. James S. McLester, Birmingham, Ala., an alumnus of the University of Virginia, Department of Medicine, Class of '99, was named president-elect. The following other officers were also elected at this time: Vice-President, Dr. George G. Reinle, Oakland, Calif.; Secretary, Dr. Olin West, Chicago; Treasurer, Dr. Herman L. Kretschmer; Speaker of the House of Delegates, Dr. Frederick C. Warnshuis, Grand Rapids, Mich.; and Vice-Speaker of the House, Dr. Nathan B. Van Etten, New York. The four last named officers were all re-elected.

Honorary awards for scientific exhibits were presented to Drs. Vincent W. Archer, S. D. Blackford, and J. E. Wissler, of University, Va.

The Medical Society of Virginia was represented by their three delegates, Drs. Warren F. Draper, J. C. Flippin, and Hugh H. Trout.

The following doctors were registered from Virginia:

Dr. E. L. Alexander, Newport News.
Dr. Howard Armstrong, Harrisonburg.
Dr. Vincent W. Archer, University.
Dr. O. O. Ashworth, Richmond.
Dr. Regena C. Beck, Richmond.
Dr. W. E. Bray, University.
Dr. W. C. Caudill, Pearisburg.
Dr. A. H. Cecha, Hampton.
Dr. John E. Collier, Richmond.
Dr. Charles E. Conrad, Harrisonburg.
Dr. Albert V. Crosby, Norfolk.
Dr. L. O. Crumpler, Danville.
Dr. Donald S. Daniel, Richmond.
Dr. R. M. DeHart, Floyd.
Dr. J. H. Deyerle, Harrisonburg.
Dr. W. K. Dix, Richmond.
Dr. Warren F. Draper, Richmond.
Dr. J. C. Flippin, University.
Dr. R. W. Fowlkes, Richmond.
Dr. R. V. Funsten, University.
Dr. A. O. Hanson, Richmond.
Dr. Wm. L. Harris, Norfolk.
Dr. I. C. Harrison, Danville.
Dr. Emory Hill, Richmond.
Dr. Fred M. Hodges, Richmond.
Dr. Guy W. Horsley, Richmond.
Dr. J. Shelton Horsley, Richmond.
Dr. K. W. Howard, Portsmouth.
Dr. James W. Hunter, Norfolk.
Dr. I. H. Hurt, Roanoke.
Dr. Louise T. Jones, McLean.
Dr. Thomas D. Jones, Richmond.
Dr. John W. Kerr, Fort Monroe.
Dr. Linwood D. Keyser, Roanoke.
Dr. M. N. King, Norfolk.
Dr. Southgate Leigh, Norfolk.
Dr. Walter B. Martin, Norfolk.
Dr. W. P. McDowell, Norfolk.
Dr. W. A. McGee, Richmond.
Dr. J. T. McKinney, Roanoke.

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Dr. J. B. Nicholls, Catawba Sanatorium.
Dr. R. L. Payne, Norfolk.
Dr. Charles H. Peterson, Roanoke.
Dr. W. B. Porter, Richmond.
Dr. Julian L. Rawls, Norfolk.
Dr. Max Schoenbaum, Richmond.
Dr. A. M. Showalter, Christiansburg.
Dr. Reuben F. Simms, Richmond.
Dr. Hunter B. Spencer, Lynchburg.
Dr. James B. Stone, Richmond.
Dr. L. E. Stubbs, Newport News.
Dr. Lee E. Sutton, Richmond.
Dr. Oscar Swineford, University.
Dr. E. H. Terrell, Richmond.
Dr. D. M. Thomasson, Lynchburg.
Dr. George A. Torrence, Hot Springs.
Dr. Hugh H. Trout, Roanoke.
Dr. J. R. Tucker, Williamsburg.
Dr. James T. Tucker, Richmond.
Dr. A. E. Turman, Richmond.
Dr. Warren T. Vaughan, Richmond.
Dr. Fred J. Wampler, Richmond.
Dr. J. S. Weitzel, Richmond.
Dr. Pauline Williams, Richmond.
Dr. B. S. Yancey, Harrisonburg.

Those who have reported on the Cleveland meeting state that it was excellent in every detail.

Married.

Dr. Rogers Newton Harris, Port Royal, Va., and Miss Mary McLaughlin, Lynchburg, Va., May 19th.

Dr. R. Angus Nichols, Jr., and Miss Elizabeth Williams, both of Richmond, Va., June 1st.

Dr. William Beverley Wilkins and Miss Gladys Nichols, June 2nd. Dr. Wilkins is a member of the class of '32, University of Virginia, and interned at Fairfield, Ala. He is now located at 913 Prince Street, Alexandria, Va.

Dr. E. Terrill Montgomery, class of '30, Medical College of Virginia, and Miss Joan Marie Kimble, Honesdale, Pa., June 16th. They will make their home in Garden City, Long Island, N. Y.

Dr. Laurie Walker Moore, class of '31, Medical College of Virginia, Beaufort, N. C., and Miss Anne Pryor Neale, Lanesville, Va., June 2nd.

Dr. Dawson Edward Watkins, Jr., recently connected with the Buxton Clinic, Newports News, Va., but now of Waynesboro, Va., and Miss Mary Evelyn Stephenson, Buena Vista, Va., June 23rd.

Dr. James Woodfin Keever and Miss Beulah Icard Streetman, both of Hickory, N. C., May 20th. Dr. Keever is an alumnus of the Medical College of Virginia, class of '27, and was for sometime connected with the medical staff of Pine Camp Hospital, Richmond, Va.

Dr. Archibald Cary Randolph and Mrs. Rebecca Dulaney McElhone, both of Upperville, Va., June 2nd.

Dr. J. B. Tuttle and Mrs. Minnie H. Buchanan, both of Craigsville, Va., June 7th.

Reunion of Class of '09, M. C. V.

At the recent finals of the Medical College of Virginia, the 1909 class in medicine of the University College of Medicine held its twenty-fifth reunion. Of the thirty-three members now living, eighteen were present. They attended the general alumni banquet on Monday night at the Jefferson Hotel and on Tuesday were entertained at luncheon at the Westmoreland Club by Dr. Sidney A. Slater, Superintendent of the Southwest Minnesota Sanatorium, a member of the class who has attained a high place in the field of tuberculosis.

Dr. A. B. Grubb spoke of the nine members of the class who have passed to their reward. Since the reunion five years ago Dr. C. W. Byrd, of New York, and Dr. M. T. Hickman, of North Carolina, have joined their fathers. Resolutions of sympathy on the death of Dr. G. P. LaRoque were adopted.

There were present Drs. J. C. Anderson, Chatham; H. H. Bowles, Summit, N. J.; M. W. Crafford, Lee Hall; L. Davis, Roanoke; R. C. Fravel, Woodstock; A. B. Gravatt, Ellerson; A. B. Grubb, Cripple Creek; C. L. Harrell, Norfolk; R. E. Hughes, North Holston; J. C. Ray, Whitakers, N. C.; G. H. Reese, Petersburg; C. R. Russell, Granite Falls, N. C.; F. G. Sigmon, Spencer, N. C.; S. A. Slater, Worthington, Minn.; J. W. Smith, Hayes Store; T. J. Tudor, Norton; W. R. Warriner, Crewe, and W. R. Weisiger, Richmond.

Dr. F. L. Finch,

Recently of Urbanna, Va., has moved to Richmond, Va., where he is associated with Dr. W. H. Parker in general practice, with offices at 602 West Franklin Street. He is a member of the class of '32, Medical College of Virginia, and interned at St. Luke's Hospital, Richmond.

At American Hospital, Paris.

Dr. W. A. Farmer and Dr. D. R. McEachern, both of whom were on the surgical service of the Hospital Division of the Medical College of Virginia for the past year, sailed on June 28th for Paris, where they have received appointments for a year's service at the American Hospital.

Dr. James S. Dryden,

Class of '33, Medical College of Virginia, who has just completed a year's internship at St. Vincent's Hospital, Norfolk, Va., has located at Jeffs, Va., for general practice.

Dr. Stephen J. Beeken,

Who graduated from the Medical College of Virginia last year, has just completed his internship at Lewis Gale Hospital, Roanoke, Va., and is locating in Cambria, Va., for general practice. He will be connected with the New Altamont Hospital in Christiansburg, Va.

American Gynecological Society.

This Society, at its annual meeting at Greenbrier Hotel, White Sulphur Springs, W. Va., May 21st-23rd, elected the following officers for the ensuing year: President, Dr. Brooke M. Aunspach, Philadelphia; treasurer, Dr. George W. Kosmak, New York City; and secretary, Dr. Otto H. Schwarz, St. Louis. The date and place of next meeting will be named later.

Medical College of Virginia News.

Dr. Hans Kleinmann, lately of the University of Berlin, joined the faculty of the Medical College of Virginia, June 1st, as associate in pathology. Dr. Kleinmann has published an unusually long list of books and articles in his special field. For ten years he was first assistant of Professor P. Rona, of the chemical department of the Biological Institute of the University of Berlin, Charite. He holds both the degree of Doctor of Medicine and Doctor of Philosophy from the University of Berlin.

His work for the Medical College has been made possible through a grant from the Rockfeller Foundation and from the Emergency Committee in Aid of Displaced Foreign Physicians, New York.

Dr. Kleinmann's work here will be mainly research in the chemical aspects of pathology.

The outpatient department report for the month of May shows 5,675 patient visits to the clinic with an average of 225 patients per clinic day.

The fourth Saint Philip Hospital Post-Graduate Clinic at the Medical College of Virginia, which is subsidized by the General Education Board of New York, opened June 18th and will continue through June 30th. Increasing interest in this clinic by Negro physicians is shown by the fact that thirty-six physicians matriculated. Four states are represented: Virginia, North Carolina, South Carolina, and Georgia.

The regular scientific monthly meeting of the staff of the college was held Thursday, May 10th. The program was as follows:

Relation of the Anterior Hypophysis to Carbohydrate Metabolism, by Dr. E. I. Evans, Washington, D. C.

Further studies upon Alveolar Carbon Dioxide, by Dr. R. J. Main, assistant professor of physiology and pharmacology.

Dr. Evans is director of the laboratories of the Bureau of Dairy Industry, United States Department of Agriculture, Washington. He is working with Dr. William R. Bond, professor of physiology at the college, on the problem of making moving picture studies of the developing fertilized rabbit ovum.

Dr. Lawrence T. Price has resigned his position as professor of clinical genito-urinary surgery, effective July 1st, after a service of some years with the college.

Dr. A. B. Carr, '21, of War, W. Va., was a recent visitor to the college.

News from Jefferson Medical College.

The One Hundred and Ninth Annual Commencement was held in the American Academy of Music on June 1st. The Valedictory Address was delivered by Dr. Ralph Dorn Hetzel, President, The Pennsylvania State College. The subject of the Address was "Some Current Assets and Liabilities."

The Graduating Class numbered 143, bringing the total number of graduates to 15,900. The graduates were registered from twenty-four different states and insular possessions and one foreign country. Forty-five members of the Graduating Class were commissioned as First Lieutenants in the Medical Officers' Reserve Corps of the United States Army.

The Annual Alumni Dinner was held on May 31st, at which time busts of Mr. Alba B. Johnson, President of the Board of Trustees, and Dr. Ross V. Patterson, Dean of the College and Sutherland M. Prevost Professor of Therapeutics were presented to the College.

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Announcement was made by Mr. Alba B. Johnson, President of the Board of Trustees, that Dr. Ross V. Patterson, Dean of the College, had been elected Sutherland M. Prevost Professor of Therapeutics, succeeding Dr. E. Quin Thornton, who has been made emeritus Professor of Therapeutics. Dr. Patterson is a graduate of the Jefferson Medical College, Class of 1904, and has been Dean of the College since 1906.

Dr. Michael A. Burns, Associate Professor of Nervous and Mental Diseases has been elected Professor of Neurology. Dr. Burns is a graduate of the Jefferson Medical College, Class of 1907, and has been connected with the teaching corps of the College since 1908.

The Graduating Class of 1934 presented a portrait of Dr. J. Torrance Rugh, James Edwards Professor of Orthopedic Surgery, to the College on April 27, 1934.

The following promotions in the teaching corps have been made during the past session:

John M. Fisher, M. D., Clinical Professor of Surgery.

John T. Brundage, Ph. D., M. D., Assistant Professor of Pharmacology.

Robert M. Lukens, M. D., Assistant Professor of Bronchoscopy and Esophagoscopy.

Henry B. Decker, M. D., Associate in Dermatology.

Henry I. Seelaus, Associate in Surgery.

Arthur J. Wagers, M. D., Associate in Larynogology.

William J. Harrison, M. D., Associate in Ophthalmology.

Harold W. Stewart, M. D., Associate in Pathology.

News Notes from the Duke University School of Medicine and Duke Hospital.

On May 12th, Dr. H. E. Sigerist, Professor of Medical History, Johns Hopkins University School of Medicine, gave a lecture in the Duke Hospital amphitheatre on Medical History, and also gave the annual Alpha Omega Alpha address; subject, Civilization and Disease.

On the same date, Dr. Robert W. Johnson, Jr., Assistant Professor of Orthopedic Surgery at Johns Hopkins University School of Medicine, lectured at the Duke Hospital on Fractures.

During the spring quarter, the following students were elected to the Alpha Omega Alpha fraternity: Eugene N. Scadron and Edwin M. Rucker.

At the graduating exercises held at Duke University June 6th, thirty-three medical students received the degree of Doctor of Medicine and five received the degree of Bachelor of Science in Medicine. At the same time, twenty-two nurses received their diplomas in Nursing.

Dr. Jesse McCall,

Recently of Pageton, W. Va., has located at Newton, N. J., where he will be engaged in general practice. He is a member of the class of '31, Medical College of Virginia and, after completing an internship at the Boston City Hospital, served as a resident physician at Memorial Hospital, Newton, N. J.

Dr. Paul S. Richards,

Class of '32, Medical College of Virginia, has located for general practice at Butler, N. J. He served his internship at the Orange Memorial Hospital, Orange, N. J.

Dr. John T. Hazel,

Formerly of Clarendon, Va., has been transferred from Philadelphia to the U. S. Marine Hospital, Boston (Chelsea), Mass.

Site of Chimborazo Hospital Marked.

A bronze tablet attached to a water worn boulder was unveiled on May 26th on the site of the old Chimborazo Hospital, Richmond, Va. This hospital was operated during the War Between the States and, at that time, was the largest military hospital in the world. The tablet was placed by the Confederate Memorial Literary Society.

Elected to Phi Beta Kappa.

Dr. Henry Dawson Furniss, gynecologist of New York City, and Dr. George Tully Vaughan, for some time professor of surgery in Georgetown University, Washington, D. C., were the two alumni elected to membership in the Phi Beta Kappa, national honor society, at the University of Virginia, this commencement. Dr. Furniss is of the class of '99 and Dr. Vaughan of the class of '79.

Dr. L. Jacobs,

Of the class of '27, Medical College of Virginia, and who later took post-graduate work in diseases of the eye, ear, nose and throat in Vienna, has located in Norfolk, Va., with offices in Wainwright

Building. His practice is limited to the above named specialty.

Dr. J. A. Noblin,

East Radford, Va., was in May elected president of the Radford Rotary Club for the coming year.

Dr. H. Rudolph Hartwell,

Recently of Troutville, Va., has located in Roanoke, Va., with offices in the Medical Arts Building. Dr. Hartwell is an alumnus of the Medical College of Virginia, class of '29.

Dr. Barton B. McCluer,

After spending the winter and spring months in Powhatan County, Va., has returned to his home at Rockbridge Baths, Va.

The Memorial Hospital for the Treatment of Cancer and Allied Diseases,

New York City, celebrated its fiftieth anniversary in May. On the evening of the 24th, the Medical Board of the Hospital conducted a scientific meeting at the New York Academy of Medicine, at which time several papers were presented. On the 25th, Dr. J. Shelton Horsley, Richmond, Va., by invitation, took part in a symposium at the Memorial Hospital, on Gastric Cancer. Other speakers on this occasion were: Dr. Louis I. Dublin, Dr. James Ewing, Dr. Lewis Gregory Cole, Dr. Gaston Labat, Dr. Fordyce Barker St. John, and Dr. George T. Pack, of New York, and Dr. Seale Harris, of Birmingham, Ala.

There were also other symposia on various phases of cancer.

Drs. Ashworth and Pinckney Associated.

Dr. O. O. Ashworth, Richmond, Va., announces that Dr. Morton Morris Pinckney, also of Richmond, is now associated with him in the practice of medicine, with offices in Medical Arts Building, this city.

The West Virginia State Medical Association

Held its annual meeting in Huntington, the middle of May, with a registered attendance of 405 members out of 1,087—an excellent attendance and the largest in the history of the Association. Wheeling was selected as the 1935 place of meeting and Dr. R. H. Walker, of Charleston, was elected President. He will serve as President-elect until January 1st, at which time he will take over the duties of Dr. Roy Ben Miller, of Parkersburg, who remains president to that time. Dr. Wm. W. Strange, Huntington, and Dr. Robt. C. Hood, Clarksburg, were elected as vice-presidents; and Dr. T. M. Barber, Charleston, and Mr. Joe W. Savage, also of Charleston, were re-elected treasurer and secretary, respectively.

Dr. Edgar W. Young,

Petersburg, Va., who was sick for sometime in the Petersburg Hospital, is now well and has resumed his practice.

New Department at Norfolk Protestant Hospital.

The Norfolk (Va.) Protestant Hospital has recently had installed a new Roentgen ray department, known as the F. S. Royster Memorial. This was the gift of Mr. Royster's children and has been supplied with the most up-to-date equipment.

Dr. A. M. McLaughlin

Has located for practice at Waynesboro, Va. He is a member of the class of '32, Medical College of Virginia, and served an internship at Johnston-Willis Hospital, Richmond.

Dr. John Jacquelin Ambler,

Class of '31, University of Virginia, Department of Medicine, has received an appointment at Doctors' Hospital, New York City. He has recently been located at the New Haven Hospital, New Haven, Conn.

The South Carolina State Medical Association,

At its annual meeting in Charleston, in May, installed Dr. William Egleston, Hartsville, as president, and named Dr. Samuel E. Harmon, Columbia, as president-elect. Dr. Edgar A. Hines, Seneca, was elected secretary for the twenty-fifth year. The 1935 meeting is to be held in Florence.

Dr. J. E. Hamner,

Who has been taking post-graduate work at the Hospital Division of the Medical College of Virginia, Richmond, has returned to his home at Rainelle, W. Va., where he is specializing in diseases of the eye, ear, nose and throat.

Dr. R. C. Cecil, who has been interning in the hospitals of the Medical College of Virginia, will be associated with Dr. Hamner after July 15th.

Dr. Wilkins J. Ozlin,

Who has been connected with the medical staff at Catawba Sanatorium, Va., has located at South

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Hill, Va. He will be engaged in general practice, with special attention to diseases of the chest.

Statement of Venereal Diseases Reported by the Public Health Service.

The following statement for April, 1934, furnishes current data as to the prevalence of venereal diseases:

State	SYPHILIS Monthly case rates per 10,000 population	GONORRHEA Monthly case rates per 10,000 population
Alabama	1.19	0.32
Arizona	.49	2.89
Arkansas	2.87	1.18
California (b)	---	---
Colorado (a)	---	---
Connecticut (c)	1.36	.58
Delaware	3.73	2.16
Dist. of Columbia	2.99	1.80
Florida	1.94	.32
Georgia	1.93	1.16
Idaho	---	---
Illinois	2.42	1.65
Indiana	.44	.40
Iowa (c)	.47	.53
Kansas	.68	.33
Kentucky	.73	1.14
Louisiana	.97	.63
Maine	.52	.61
Maryland	3.99	1.58
Massachusetts	.90	1.00
Michigan	.96	.68
Minnesota	1.46	1.17
Mississippi	5.16	7.33
Missouri	1.70	.82
Montana (c)	.97	.24
Nebraska	.31	.41
Nevada (a)	---	---
New Hampshire	.30	.30
New Jersey	1.65	.52
New Mexico	1.75	.58
New York	3.74	.88
North Carolina	3.01	.85
North Dakota	.39	.58
Ohio (c)	.88	.34
Oklahoma (c)	.64	.48
Oregon	.19	.60
Pennsylvania (b)	---	---
Rhode Island	.64	.67
South Carolina (c)	2.31	2.87
South Dakota	.03	.24
Tennessee	4.43	1.62
Texas	.25	.04
Utah (a)	---	---
Vermont	.53	.50
Virginia	1.46	.95
Washington	1.00	1.21
West Virginia (b)	---	---
Wisconsin (d)	.11	.52
Wyoming (a)	---	---
Total	1.74	0.96

(a) Not reporting.

(b) Have been reporting regularly but no report received for current month.

(c) Incomplete.

(d) Only cases of syphilis in the infectious stage are reported.

Surveys in which all medical sources have been contacted in representative communities throughout the United States have revealed that the monthly rate per 10,000 population is 6.6 for syphilis and 10.2 for gonorrhea.

Dr. Banting Honored.

Dr. Frederick Grant Banting, for the past ten years professor of medical research at the University of Toronto School of Medicine, Toronto, Canada, was knighted by King George, of England, on June 3rd, this honor being bestowed in recognition of his discovery of insulin.

Officers in Lions Club.

At the annual meeting of the Lions Club of Farmville, Va., in June, Drs. H. C. Alexander and W. E. Smith of that city were elected as two of the directors. Dr. Thos. G. Hardy was the retiring president.

Medical Society of the State of North Carolina.

At the annual meeting of this Society, recently, Dr. Paul P. McCain, Sanatorium, was installed as president for the coming year, Dr. Paul H. Ringer, of Asheville, was chosen as president-elect, and Dr. L. B. McBrayer, of Southern Pines, was re-elected secretary. It was voted to hold the next annual session at Pinehurst, May 6-8, 1935.

The American Psychiatric Association

Held its annual meeting at the Waldorf-Astoria, New York City, May 28th, with the president, Dr. George H. Kirby, of New York, presiding. More than 700 psychiatrists and physicians attended the opening dinner of the Association. Those noted from Virginia were: Dr. G. W. Brown, Williamsburg; Dr. J. K. Hall, Dr. E. H. Alderman, Dr. H. DeJ. Coghill and Dr. C. T. Wilfong, from Richmond; Dr. G. B. Arnold, Colony; and Dr. H. C. Henry, Dr. M. S. Brent and Dr. T. L. Gemmell, from Petersburg. Drs. Arnold and Wilfong were elected to membership this year.

At this meeting, the eight living ex-presidents were given badges of honor. Among these was Dr. William F. Drewry, of Richmond, Va. Being unable to attend on account of sickness, his badge was received for him by his daughter, Miss Phoebe Drewry, a graduate student at Columbia University, New York.

Dr. C. Fred Williams, Columbia, S. C., was installed as president; Dr. Clarence O. Cheney, New York, was chosen president-elect; and Dr. William C. Sandy, Harrisburg, Pa., was re-elected secretary-treasurer.

The 1935 meeting is to be held in Washington, D. C.

American Association of Genito-Urinary Surgeons.

At the annual meeting of this Association in May, Dr. Robert C. Bryan, Richmond, Va., was inducted into office as president for the ensuing year, Dr. James D. Barney, Boston, was named president-elect, and Dr. Henry I. Sanford, Cleveland, was re-elected secretary.

Dr. R. P. Hawkins, Jr.,

Clifton Forge, Va., was named as one of the directors of the Mountain National Bank, which opened recently in that city.

Alpha Epsilon Iota,

National fraternity for medical women, held its biennial meeting in Richmond, Va., May 31st through June 2nd, with Pi Chapter of the Medical College of Virginia as hostess. At this meeting, the following officers were elected: President, Dr. Margaret Reynolds, New York; Vice-President, Dr. Olga Hansen, Minneapolis; Secretary, Dr. Luvia Willard, New York; Treasurer, Dr. Helen Cary, Portland, Oregon; Editor-in-Chief, Dr. Margaret Nicholson, Washington; Associate Editor, Dr. Ruth Stone Stelle, Dryden, N. Y.; and Archivist, Dr. Jenne Cady Solis, Ann Arbor, Mich.

Following the meeting, a number of the visitors enjoyed the sight-seeing trip to Williamsburg and vicinity, arranged by the local chapter.

Wanted—

Obsolete patterns of surgical instruments. Must be in good condition. Specify type of instruments. Address "Instruments," c/o VIRGINIA MEDICAL MONTHLY. (*Adv.*)

For Sale—

Physician's McCaskey System. Practically new. Can be bought at an unusually moderate price. Address "K," care this journal. (*Adv.*)

Doctor's Home for Rent or for Sale.

Splendid location in Richmond, for young physician. For information, address Mrs. J. G. Trant, 2702 East Broad Street, Richmond, Va. (*Adv.*).

Obituary Record

Dr. Walter Edward Beattie,

One of the best known of the younger physicians of Alexandria, Va., died June 9th, following an illness of three days due to a throat infection. He was twenty-nine years of age and graduated in medicine from the Georgetown University, Washington, D. C., in 1929. Dr. Beattie was a member of the medical staff of the Alexandria Hospital and, for the past two years had been city coroner. He was a member of the Kiwanis Club and several other organizations. Dr. Beattie was secretary of the Alexandria Medical Society and had been a member of the Medical Society of Virginia for several years. His wife and two daughters survive him.

The Alexandria (Va.) Medical Society has adopted the following resolutions on the death of Dr. Beattie:

WHEREAS, That in the death of Dr. Beattie is sustained the loss of one of our most gifted, useful, and capable, young members of the Medical Society of Alexandria; therefore,

Be it Resolved, That we give expression to the feelings of heartfelt sorrow that overwhelm us because of his untimely death; that we feel by his departure in the prime of his life and his unfinished career, his chosen city has lost an ardent helper and the science of medicine an earnest and able worker.

Resolved, That we extend our sincere sympathy to his sorrowing family, and

Resolved further, That a copy of these resolutions be transmitted to the bereaved family and spread on the minutes of the Staff of the Alexandria Hospital and published in our daily paper and in the JOURNAL OF THE MEDICAL SOCIETY OF VIRGINIA.

S. B. MOORE, M. D.,
W. T. BURCH, M. D.,
O. A. RYDER, M. D.,
Committee.

Dr. Wyatt S. Beazley, Sr.,

Well-known physician of Richmond, Va., died June 6th, after a long illness. He was a native of Greene County, Virginia, and was sixty-six years of age and received his medical degree from the Medical College of Virginia in 1893. Dr. Beazley had practiced medicine in Richmond for the last forty-two years. He had been a member of the Medical Society of Virginia for forty years, and was also a member of several other organizations. His wife, three daughters and a son, Dr. Wyatt S. Beazley, Jr., of Richmond, survive him.

Dr. Isaac Errett Wolfe,

Widely known physician of Southwest Virginia, died at a Richmond hospital, June 20th, after an illness of two weeks. The burial was at his home, Coeburn, Va. Dr. Wolfe was a native of Scott County, Va., and fifty-seven years of age. He re-

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ceived his medical degree from the University of Louisville, Ky., and later took post-graduate work in New York. During the World War he served in the medical corps of the Army, with the rank of captain. He was a Mason, a member of the American Legion, the Clinch Valley Medical Society, and the Medical Society of Virginia. He is survived by his wife and a daughter. One of his brothers is Dr. Joseph B. Wolfe, of Coeburn.

Dr. Chester Allen Amos,

Alexandria, Va., was killed instantly June 10th when the car which he was driving collided with a freight train. He was forty-one years of age and a graduate of the University of Virginia, School of Medicine, in 1917. Dr. Amos had been a member of the Medical Society of Virginia for twelve years. He is survived by his wife and one daughter.

Dr. George B. Young.

The following tribute was paid the memory of Dr. Young, at a recent meeting of the Albemarle Medical Society:

The Albemarle Medical Society wishes to record its deep sorrow and sense of loss in the death of Dr. George Bright Young, February 13, 1934.

Dr. Young's medical training was obtained at the University of Virginia and the University of Maryland, from which latter institution he graduated in 1887. He first practiced in Orange, Va., later spent a year or more in New York hospitals and finally entered the United States Public Health Service in 1890. The major portion of Dr. Young's professional life was devoted to the Public Health Service. The most meager reference to his connection with the Service would be incomplete without mention of his achievements in cholera prevention for the immigration authorities in 1893, his sane administration of train inspection for yellow fever in 1905 and his outstanding accomplishments as health commissioner for the city of Chicago from 1911 to 1915. From January, 1917, to April, 1919, he was "loaned" to the Naval Department and functioned as sanitary officer for the Fifth Naval District. He retired from the Service in August, 1924, with the rank of senior surgeon.

Dr. Young's membership in the Albemarle Medical Society began with his assumption in the fall of 1924, of the duties of joint health officer for Charlottesville and Albemarle County along with the associate professorship of public health in the Medical School of the University. His eminent qualifications for these positions permitted him to put his new work on an effective basis with unusual promptness. By his sure knowledge and executive tact, he quickly secured the approbation and cooperation of the practicing physicians and, further, was successful in increasing the intelligent interest of the laity in the problems of public health and in securing their support for remedial measures. He was equally successful in his teaching contacts with the senior medical students at the University. Ill health necessitated his retirement in 1931.

In Dr. Young's relatively short but active association with the Albermarle Medical Society he won the esteem of his colleagues as a truly scientific physician and their respect and affection for him as a man. His life was one of real attainment and unselfish service. The sincere sympathy of the members of the Society goes out to his family.

JOHN H. NEFF, M. D.
J. EDWIN WOOD, M. D.
EDWIN MCGUADE, M. D.

Dr. William W. Buck,

Rural Retreat, Va., died March 25th, of heart disease and nephritis. He was seventy-seven years of age and a graduate of the College of Physicians and Surgeons, Baltimore, in 1885. Dr. Buck was formerly a member of the Medical Society of Virginia, having resigned sometime ago on account of his health.

Dr. William Edward Cook,

An alumnus of the Medical College of Virginia, Richmond, class of '01, died at his home in Pageton, W. Va., on May 5th, death being due to chronic myocarditis. He was sixty-three years of age and a World War veteran.

Dr. Peter D. Argobast,

Morgantown, W. Va., died on March 31st, aged sixty-seven years. He was graduated in medicine from the University of Virginia, Charlottesville, in 1901.

Dr. Joseph L. Spruill,

Jamestown, N. C., a past president of the Seaboard Medical Association of Virginia and North Carolina, died on May 5th, after a long illness. He was sixty-three years of age and a graduate of the University of Maryland School of Medicine, Baltimore, in 1895. At the time of his death he was medical superintendent of the Guilford County (N. C.) Tuberculosis Sanitarium.

Dr. Robert Hill Davis,

For many years a resident of St. Louis, Mo., where he was connected with the dermatalogical department of the University of St. Louis, died at University, Va., June 19th, at the age of fifty-nine. He graduated in medicine at the University of Virginia in 1901 and later studied in Berlin and Vienna. Two sons survive him. He was a brother of the late Dr. John Staige Davis, of the University of Virginia.

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